Brightlayer Data Centers suite
White Paper



Simplify the management of complex data center and distributed IT environments

How software delivers an operational and productivity edge

Mike Jackson
Director of product, data center software
Eaton

Executive summary

As the world becomes increasingly digital, data centers are challenged to find more effective and efficient ways to run their operations, while organizations with IT assets located across multiple sites are relying more than ever on their distributed technology—often with no on-site IT support. To overcome these challenges, forward-thinking organizations are building a foundation of digital intelligence with a desire to remove the traditional silos that have isolated IT and operational technology (OT) networks.

This white paper explains how the convergence of traditionally separate software solutions into a single digital platform will help you streamline and optimize your increasingly complex operations in new ways so you can achieve your goals.

Powering Business Worldwide

The adoption of neural network computing and generative-artificial intelligence (AI) have caused data center operators to re-examine their facility designs and operational capabilities. Controlling costs while maintaining operational excellence remains a top priority, as does managing distributed IT assets across facilities—from tens to thousands of locations. At the same time, operators are being asked to meet aggressive environmental, social and governance (ESG) goals.

Data centers worldwide are faced with this seemingly impossible reality—heightening the critical need for more effective resource management, facility monitoring and control. While at the same time, organizations with IT assets installed at multiple locations—from retail stores to medical clinics to schools—are relying more than ever on the technology at their sites. With no on-site IT support at most locations, they need technology they can rely on to keep operations going.

To overcome these challenges, most data center operators are building a foundation of digital intelligence to optimize performance with a desire to remove the traditional silos that have isolated IT and operational technology (OT) networks. This convergence of IT and OT provides direct control and comprehensive facility management; however, it also introduces new challenges that must be solved.

This is because data centers of all sizes—from enterprise to colocation and multi-tenant to edge and hyperscale—have traditionally relied on 10 or more software applications to monitor components and systems across their IT and OT networks. This makes data center management more complex than it needs to be for the operational staff. It also makes it exponentially harder to translate collected data into actionable insights that drive continuous improvement.

Instead of wading through tens of infrastructure management systems for the information that matters, what if your power infrastructure, from the data center to the edge, was consolidated into a single application?

When you're able to manage, monitor and control your entire enterprise with one software solution, the critical data you need to manage energy resources can flow between departments with ease. You can anticipate what your data center and edge sites need to optimize performance, track and model progress toward important goals, and significantly reduce the complexity of preventive maintenance. At Eaton, we're making these capabilities a reality.

Software creates a digital foundation for success

To help data center customers simplify the management of their increasingly complex environments, we developed the industry's first software platform to converge asset management, IT and OT device monitoring and control, power quality metrics, IT automation and advanced electrical supervision in a single, native application.

This approach breaks the traditional barriers of data center infrastructure management (DCIM), electrical power monitoring system (EPMS) and distributed IT management with three unique solutions that can be used alone or together based on your requirements. The platform provides an easy path to add more functionality in the future by simply applying an updated license key—no need to migrate data or change or integrate multiple software applications.

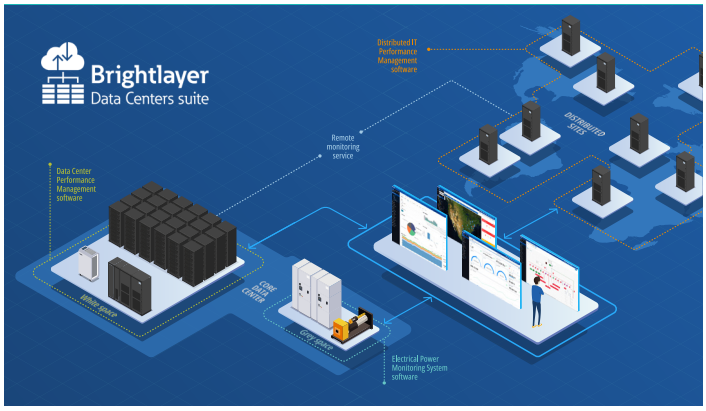
Our software platform, which is part of Brightlayer Data Centers suite, includes the following products:

- **Data Center Performance Management (DCPM) software:** Enables you to maximize IT application uptime while minimizing capital and operating expenditures. It monitors, trends, alerts, reports and manages your power, space and cooling resources across one or more facilities. It also provides the insights you need to optimize your operations over time, so you can increase your data center's performance while managing costs.
- **Distributed IT Performance Management (DITPM) software:** Provides deep intelligence into network-connected assets, such as power distribution units (PDUs) and uninterruptible power supplies (UPSs), located across multiple locations—regardless of vendor. This enables you to manage and control the equipment located at your remote locations, and proactively identify and automate actions to prevent IT equipment from going down.
- **Electrical Power Monitoring System (EPMS) software:** Delivers real-time and historical visibility into an electrical power system at a single data center or multiple facility locations. This helps you maximize equipment uptime, quickly resolve and identify the root-cause of unexpected issues, and understand your facility's use of water, air, gas, electricity and steam (WAGES) to reduce operating costs and meet sustainability goals.

For customers of Eaton single- and three-phase UPSs, the suite also includes an around-the-clock remote monitoring service that aggregates data from your connected UPSs and dispatches an Eaton field technician when a critical event occurs. The service applies analytics to predict component failure and prevent unplanned downtime, and can be connected to other Brightlayer Data Centers suite applications to provide a complete monitoring and hybrid remote service response from Eaton.

By managing your ecosystem of IT and OT assets in a single, native application, you gain full system visibility, enabling you to:

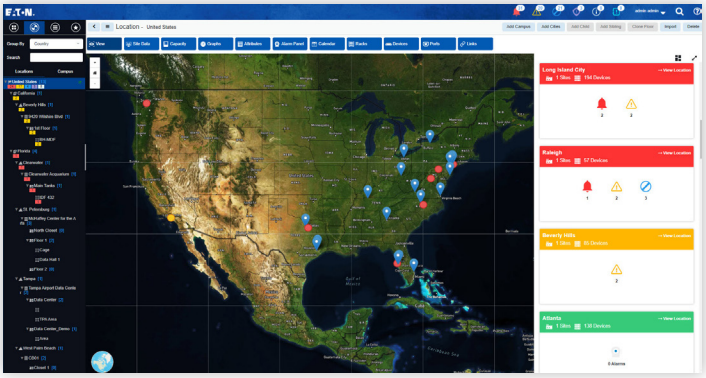
- **Aggregate your data and put it to work**. From managing capacity and asset lifecycles, to knowing when and where to add new assets, you will work faster and easier when you have reliable information at your fingertips.
- **Visualize your entire operation in real time**. Increase business continuity and network security with a simplified, centralized view of errors and actions required across your site(s).
- **Maximize operational efficiency**. Manage power and automate equipment at the device level, remotely control equipment, mitigate disaster, reduce downtime and run predictive analysis so you always stay one step ahead without being physically present.



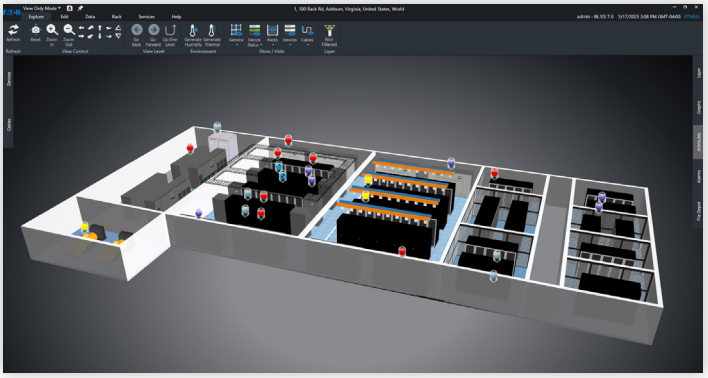
The Brightlayer Data Centers suite is a portfolio of digital solutions that will enable you to efficiently manage IT and OT assets in a single, native application, providing full system visibility so you can keep your operation running and spend more time on what you need to accomplish.

Software convergence can simplify the most complex data center and distributed IT operations

By combining three traditionally separate software solutions into a single application, you can streamline and optimize your operations in new ways to meet a wide variety of needs.



Map and distributed alarming report provides visibility into what's happening across your sites.



3D visualization tool provides rack-level insights.

Distributed IT

DITPM software allows you to remotely manage and control network-connected assets, regardless of vendor or location. You can remotely control PDU outlets and UPS load segments, power cycle devices, diagnose, and take proactive corrective action when needed. And you can automate physical and virtual device response and/or shutdown during critical power events or environmental stress conditions, such as high temperature, to protect equipment. You can even shutdown data backup servers when they're not actively being used to create an extra air gap against attack.

If you have a core data center, you can harness DCPM software to manage the assets in your data center, as well as your edge locations. This will enable you to closely monitor and manage your end-to-end power chain, ensuring you always know how your assets are performing, what the environmental conditions are and how much capacity is available across your entire enterprise.

Generative AI

Training and deploying the large language models required for generative AI has created massive new operational and capacity demands on data centers, sparking an upsurge in power consumption while necessitating the use of higher rated electrical equipment and supplemental cooling. This means operators not only need a more intelligent approach to manage increased power, computing and environmental monitoring requirements, but also a better way to manage equipment assets.

Whether brownfield or greenfield, the combined capabilities of our DCPM and EPMS software enable you to fully manage your white space and grey space via a single application. You can monitor your power, cooling and white space assets from a dashboard view, while quickly modeling changes to your white space to ensure your current or planned infrastructure can accommodate the demands of AI additions.

Once your infrastructure is optimized to support AI, you can visualize your data center down to the room, rack or device to maintain uptime. With 3D models, capacity and utilization tools, and proactive alarms for temperature and humidity, electrical utilization, and more, you can see and avert potential issues before they have a chance to impact your most critical processes.

High-performing data centers

The close coupling of our DCPM and EPMS software enables you to manage, monitor and control IT and OT assets—all while gaining a historical and near-real-time view into electrical power system performance.

In today's intensive data center environments, this converged capability can simplify complex tasks like balancing server-level power consumption. For example, you can identify precisely why and where a particular server is consuming more energy than normal by leveraging rack- and row-level power balancing analytics. When you're able to dig this deep into power system anomalies, you eliminate the guesswork. Instead, you can easily navigate through device-level data, isolate the root cause and quickly respond with properly informed IT or OT staff to address the problem.

Sustainability and ESG compliance

The close coupling of our DCPM and EPMS software enables you to manage, monitor and control IT and OT assets—all while gaining a historical and near-real-time view into electrical power system performance.

Whether you're reducing energy consumption or adding distributed energy resources (DERs) to reduce electricity spend, you need infrastructure that reports on your progress with real-time, data-driven insights. Simply put, you cannot manage what you cannot see. So, the ability to understand where energy is coming in, how it is being consumed and the potential impact of upgrades is essential to achieve continual improvements for energy optimization and sustainability.

EPMS software enables data center managers to view stored, normalized data for review and analysis, compliance reporting and accurate change management forecasting. The dashboard view can help management teams fully understand and report on their facility's use of WAGES to reduce consumption or change usage patterns.

And as DERs and other energy transition technologies are integrated to help offset energy costs, our software can integrate these assets into your facility's one-line diagram to monitor and track their impact on the power chain—helping demonstrate the full potential of your peak-shaving and demand response investments.

Multi-tenant and colocation data centers

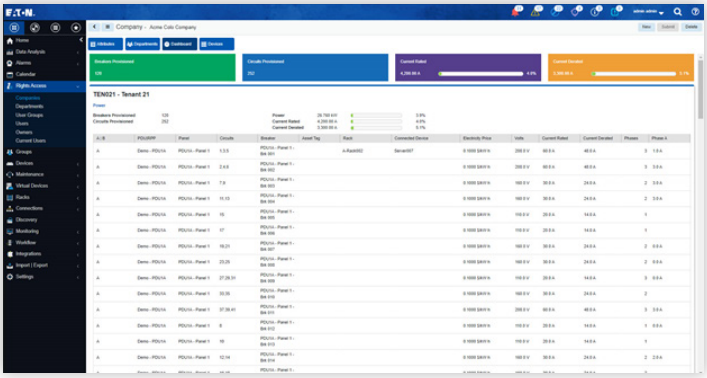
Operators need effective tools to balance the often-competing demands of reducing costs and avoiding service level agreement (SLA) penalties, achieving sustainability goals and automating operations.

While traditional DCIM and EPMS software provide distinct advantages to help resolve key data center needs, integrating the two presents an opportunity to solve some of your biggest challenges—and set you apart from competitors.

By using our DCPM and EPMS software together, you can plan more effectively for the future utilization of space, power and cooling capacity, and even create new revenue streams by providing direct access to visualizations and insights at the tenant level by seamlessly sharing data between critical enterprise or homegrown applications with REST API calls or other integrations.

The comprehensive monitoring and reports available with the combined solution will enable you to track and optimize WAGES consumption to reduce operational costs, compare parameters between facilities, assess current operational state and how equipment is performing, gauge power quality and more. You can also view SLA metrics and, when needed, receive escalation alerts so you can initiate corrective action.

Additionally, because the software provides alerts, consolidates data across any vendor or protocol, and automates many tasks, it will enable you to allocate more time to future planning and proactive maintenance, rather than troubleshooting issues and performing repetitive daily operational tasks.



Site- or tenant-level breaker utilization report will help you understand consumption.



5 benefits of converged infrastructure management

With that base in mind, let's look at more ways our approach to data center and distributed IT management can help you gain a competitive edge.

1 Complete visibility

Our streamlined approach empowers you to know exactly where your assets are located and what the environmental conditions are across one or more facilities to minimize operational costs and stranded capacity. It also delivers the meaningful insights you need to optimize and manage performance like never before.

Now, you can completely visualize your operations—from one or more locations to a room, rack or device—in user-friendly 3D environments that display real-time temperature and humidity, electrical utilization, critical power chain and more. This consolidated dashboard view also offers near real-time visibility into key performance indicators such as power usage effectiveness and capacity utilization so you can ensure your operations are running as expected.

When our DCPM and EPMS software are used together, you gain an in-depth view of your data center operations that enables you to dig deep into the health of your power, space and cooling assets. This enables you to compare parameters between facilities, assess current operational state and how equipment is performing, gauge power quality and more. You can also identify, analyze and resolve issues, and prevent reoccurrence through comprehensive power quality and waveform analysis, a historical high-resolution dataset and custom one-line diagrams.

Meanwhile, the same platform can be leveraged to manage assets, quickly resolve and identify the root-cause of unexpected issues, and report on your facility's use of WAGES to reduce consumption or change usage patterns.

With this level of visibility, you can quickly react to problems as they arise, and anticipate what your data center needs—before it needs it—to accurately assign maintenance activities and maintain uptime, without any wasted labor or truck rolls.

2 Compatibility and interoperability

You don't need to waste time researching vendors and platforms to make sure your hardware and software gets along. DCPM, DITPM and EPMS software integrate seamlessly with VMware and other software solutions you're already using, such as building management systems (BMSs), configuration management databases (CMDBs) and IT service management (ITSM) applications, to create a cohesive software solution that improves efficiency, increases productivity and data accuracy, improves decision making, and saves cost. You can simplify data sharing across your enterprise software with data synchronization, REST API calls and bulk import processes.

We've designed the same level of interoperability into device-level data collection as well. With our DITPM or DCPM software, you can remotely manage and control network-connected assets, such as PDUs and UPSs, regardless of vendor or location. Simply integrate all assets, configure your desired level of monitoring and proactive alarms to unlock more intelligence.

3 Efficiency

Combining three software platforms into one reduces the number of applications you need to manage and maintain, as well as the number of vendors, invoices and maintenance contracts you need to follow.

These efficiency gains also extend to labor and training. One platform and vendor means significantly less training time and the opportunity to develop deep platform expertise.

Additionally, the ability to optimize asset lifecycle tracking and maintenance with real-time data, automated alerts and workflow management helps slash operational overhead while maximizing the impact of preventive maintenance procedures.

Further, as you expand your digital footprint, it becomes imperative to protect the availability, integrity and confidentiality of your systems. Eaton manages cybersecurity risks in products through a Secure Development Lifecycle (SDL) with protocols in place for threat modeling, requirements analysis, implementation, verification and ongoing maintenance to manage risks throughout the entire product lifecycle.

There's no need to take chances with our connected solutions. With products tested in our third-party approved labs to the industry's most stringent requirements, our customers can rest easier, knowing their devices and software solutions are compliant with the highest industry cybersecurity requirements before they are installed in critical systems.

4 Adaptability

Our digital solutions enable you to scale your foundation of digital intelligence at a pace that works for your organization without time-consuming data migrations or paying for features you're uncertain you need.

Because our platform is inherently scalable, it eliminates the need to install new software modules, migrate data, or change or integrate multiple software platforms as your business evolves. You can instantly add the functionality you require at a pace that works for you with a simple license key update—no need to migrate data, or change or integrate multiple software platforms.

5 Mobility

Edge infrastructure, whether it's a data center or site without on-site IT support, is increasingly reliant on centralized management. Shouldn't your data and software offer the same capability? When essential equipment unexpectedly goes down at a remote location, you must fix the problem quickly to minimize the impact to your organization's bottom line.

Our DITPM and DCPM software create greater mobility in workloads and applications by simplifying remote or unmanned site operations. This capability provides full visibility into your equipment so you can remotely troubleshoot issues, control edge devices and protect assets during abnormal operating conditions—such as power outages and surges—by gracefully shutting down IT infrastructure before data corruption occurs, inform staff and assign tasks to resolve issues, and keep UPSs up to date with mass configuration and firmware updates. All of these features will help you gain efficiencies that save time and money.

Build a foundation of intelligence for the needs of today and tomorrow

Conclusion

Today, most organizations rely upon an interdependent ecosystem of IT, cooling and power assets that is more complex than ever—but managing them doesn't need to be complicated.

At Eaton, we're making it easier to take control of your IT and OT assets with a single, native application that provides full system visibility so you can keep your operation running and spend more time on what you need to accomplish.

Every element of our software solutions are built to help managers of data centers and distributed IT environments meet the relentless pressure to be faster, more efficient and more reliable. Our deep industry knowledge and more than 100 years of power management expertise have culminated in a nimble, scalable and robust platform that will help you harness the power of your operational data to optimize efficiency, resiliency and security—without juggling multiple dashboards or paying for features you'll never need.

About the author

Mike Jackson is the director of product for data center software at Eaton. In this role, he leads the global software product management, marketing and commercial operations team responsible for the development and go-to-market strategy for data center and distributed IT software applications, and digital services.

Jackson joined Eaton in 2007 and has held various roles in product leadership, marketing, sales and operations. He earned a bachelor's degree in mechanical engineering from the University of Dayton and an a Master of Business Administration from North Carolina State University.

For more information, visit
Eaton.com/BrightlayerDataCenters

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

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