

### Introduction

Now more than ever, data center managers are being asked to do more with less.

They need to increase energy efficiency to meet corporate sustainability goals and they need to drive automation to boost productivity. To meet these objectives, they are deploying modern infrastructure management software.

As a leader in second-generation Data Center Infrastructure Management (DCIM) software, we are often asked by data center managers how to best increase sustainability, leverage automation via integration, and simplify the ever-increasing complexity of data center management with cutting-edge tools.

In this document, we've compiled the questons we get asked most frequently. The answers will provide best practices and information that will help you optimize your data center operations.

### Part 1: Data Center Sustainability FAQs

### What role does the data center industry have in contributing to global energy usage and how are data center operators tackling this?

The data center industry is estimated to be responsible for somewhere between 2-3% of all global energy consumption. With energy-hungry technology like 5G mobile networks, big data, and artificial intelligence still just taking off, data center demand is likely to continue to grow for some time.

As customers, governments, and industry regulators push for increased social responsibility, many data center operators now have corporate sustainability goals to meet. In many cases, organizations have set goals to be carbon neutral—or even carbon negative—by as early as 2030.

To meet their corporate sustainability goals, data center operators are now laser-focused on saving energy, maximizing the utilization of their existing footprint, reporting on energy efficiency metrics, and following best practices for sustainability.

#### What are some of the steps data center operators can take to reduce their carbon footprint?

There are tried-and-true best practices that can help any data center operator reduce their carbon footprint.

First, operators should instrument their data center with meters and sensors to collect data on their power and environment. This data is critical for making the most informed energy management decisions.

Raising the temperature is one simple way to immediately increase efficiency. Modern equipment can handle warmer environments, but many operators play it safe and keep temperatures cool. However, they can reduce energy consumption by 4-5% for every 1° F increase in server inlet temperature.



White Paper

Separating cold supply air from hot exhaust air via hot/cold aisle containment can improve energy efficiency by up to 40% compared to an uncontained environment.

Minimizing bypass airflow improves cooling efficiency. Materials like blanking panels and raised floor grommets are cost-effective and easy to implement solutions that can achieve small but noticeable energy savings.

Up to 30% of servers in a data center may be ghost servers that consume energy but perform no useful function. Ghost servers, along with power hogs, should be identified and decommissioned, virtualized, or replaced with more efficient equipment.

Reusing and recycling equipment is encouraged to reduce the amount of unnecessary carbon emissions caused by the equipment manufacturing process.

Renewable energy such as solar, wind, and hydroelectric power may be purchased or generated onsite to replace dependence on fossil fuels. These energy sources continue to become more costeffective every year.

Finally, DCIM software is a must-have to measure, trend, and report on energy efficiency metrics, maximize the utilization of existing resources to defer wasteful new buildouts, and drive more energy-efficient behavior.



## Can data center operators ever expect to balance availability and reliability with sustainability, and if so, how?

It's a common concern that increasing sustainability comes at the expense of increased risk to availability and reliability, but that doesn't have to be the case.

With DCIM software, operators can rest assured that their sustainability initiatives aren't introducing risk with real-time power and environment monitoring capabilities.

Users can set warning and critical thresholds on rack loads, inlet loads, circuit breaker loads, three-phase balance, temperature, and humidity. When a threshold is violated, the user is automatically alerted so they can remediate any issue before it causes a serious problem.

Power and environment monitoring helps protect sustainability initiatives from causing downtime, losing redundancy, forming hot spots, and causing other conditions that may impact services.



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#### How can DCIM help reduce energy consumption?

There are many ways DCIM software helps reduce energy consumption.

First, DCIM software allows operators to measure, trend, and report on energy consumption so they have the data they need to make more informed decisions.

With DCIM software, live measured readings from meters and sensors are transformed into actionable insights by trending and forecasting power and environmental metrics so operators know where they are and where they're going.

Real-time charts and reports like PUE, carbon footprint, temperature per cabinet, delta-T per cabinet, and stranded power capacity help measure, compare, and improve energy efficiency.

Energy cost reports can be generated by data center, business unit, customer, or service/application to identify power hogs and eliminate human error.

Next, DCIM software enables operators to dramatically increase energy efficiency.

Built-in cooling charts ensure compliance with manufacturer and industry-accepted temperature and humidity recommendations (e.g., ASHRAE) so operators can save energy by safely increasing temperature set points.

Customer bill back reports accurately allocate energy costs across the organization to drive energy-efficient behavior from internal and external customers.



Ghost servers and power hogs can be easily identified so operators can decommission them, replace them with more efficient hardware, or virtualize them.

Last, DCIM software enables operators to maximize the utilization of their existing footprint so they can defer buildouts of power-hungry cabinets or even new data centers.

With the Auto Power Budget feature, operators can automatically calculate power budget profiles for each device instance (e.g., make/model of a server) based on trended actual power utilization. Customers like Comcast and eBay report improvements in rack power utilization by as high as 40% due to this ability.





Operators can easily find and reserve the perfect place to deploy new equipment to maximize the utilization of cabinet space resources and delay wasteful new buildouts.

And with power and environment monitoring with thresholds and alerts, operators are the first to know of conditions that may impact services so they can reduce the risk of downtime caused by energy efficiency initiatives.

#### How is Sunbird changing the way sustainable data centers are being managed?

Customers tell us that first-generation DCIM tools are difficult to use, slow to deploy, and lack integration, and point tools like Excel and Visio are not shareable or scalable.

Sunbird is solving these pain points with second-generation DCIM.

Second-generation DCIM dramatically simplifies data center management via:

**Super-fast deployments.** Deployment takes half the time of first-generation tools, requires significantly fewer resources, and provides fast ROI.

**Completeness of capabilities.** Depth of functionality covers asset, capacity, change, energy, power, environment, security, connectivity, visualization, and business intelligence and analytics.

**Zero-configuration analytics.** Pre-built dashboards, charts, reports, and visual analytics come out of the box, requiring no tedious configuration effort.

**Automation via integration.** A complete set of free APIs and connectors enable automation to save time, improve data accuracy, and simplify data sharing.

**Compatibility with what you have.** Industry-standard protocols provide broad compatibility with virtually all third-party meters, sensors, and software.

**Extreme scalability.** Enterprise-class scalability that can handle millions of assets, billions of data points per day, and thousands of users.

**Ease of use.** Elegant design that requires fewer clicks, fewer mouse movements, and is intuitive to use.

**Data-driven collaboration.** Shared dashboards and team views break down organizational silos and encourage information sharing.

**Al and machine learning.** Machine learning technology enables automatic power capacity planning to increase the efficiency of capacity utilization.





## How do your core company values align with your focus on sustainability practices and achieving net zero carbon by 2030?

Sustainability is very important to us. Our product is made to help data center managers do more with less, and we want to support them in their efforts to become carbon neutral.

Recently, we've been hearing from many data center managers that they want to reduce their carbon footprint, and we're happy to have a solution that can help them achieve that goal easier, faster, and with less risk.

Our measure of success is our customers' success, and our product roadmap is developed in partnership with customers in our global user group program. We work together to create a solution that will help them increase energy efficiency and maximize the utilization of their existing resources.

### Part 2: Data Center Automation FAQs

#### Why are data center sites becoming increasingly complex and difficult to manage?

The demand for data center services has never been higher. Today's data center managers face skyrocketing data storage needs, increasing rack densities, more connected devices, and massive energy consumption. The demand for data center services is driving more technology deployment and faster upgrades of outdated power-hungry systems and components, in turn driving more change within the data center.

To add to this complexity, modern data center environments are distributed across many remote sites such as colocation and edge deployments.

Data center managers struggle to remotely track all their assets, plan and manage their infrastructure capacity, perform changes at speed, increase energy efficiency, and safeguard their assets and data from physical and cyber security threats, all while minimizing risk and maximizing uptime.

To make matters more difficult, many data center managers are forced to work with a myriad of disparate tools that lack integration. They have siloed databases with no single source of truth and must sacrifice productivity and data accuracy by manually entering data into multiple systems.

### Why—and how—should data center managers follow best practices to maintain uptime, increase efficiencies, and improve productivity?

Maintaining uptime, increasing efficiency, and improving productivity are arguably the three most important objectives for any data center manager.

Downtime has been estimated to cost \$5,600 per minute on average, and that figure can be much higher for larger organizations. Downtime leads to lost sales, damaged brand reputations, and SLA payouts.



White Paper

Driving efficiency is more important than ever as most data center managers now have corporate sustainability initiatives they must comply with. Increased efficiency also leads to reducing operating costs and extracting more value out of existing capacity.

By improving productivity, data center managers can devote more resources to strategic projects rather than manual, time-consuming tasks. This can result in getting services online faster and responding to outages quicker.

Over the years, there has been plenty of new insights and process innovation that are driving data center management best practices. While there are many, the ultimate data center management best practice is "integration with automation" or stitching together the multitude of data center operations tools and having a centralized view of all resources and capacities from integration of CMDBs, DCIM, BMS, ticketing, and other tools. This real-time sharing of salient data makes data center asset, capacity, and change management easier and faster than ever before.



## What trends have you seen regarding data center managers operating remotely and what challenges does this pose?

Remote data center management is the new normal. Whether it's due to COVID-19 and work from home, security requirements to minimize onsite staff, or the distributed nature of modern data center environments, most data center professionals are no longer working onsite.

When working remotely without the right tools, data center professionals struggle to achieve their core objectives of maintaining uptime, increasing the efficiency of capacity utilization, and improving productivity.

Maintaining uptime remotely is a challenge when you don't have information on the real-time power and environmental conditions within the data center and you can't go onsite to take manual readings. A circuit breaker might trip or hot spots might damage equipment before you even know an issue is developing. When there is a serious problem, it can take more time to troubleshoot and resolve it.

Capacity planning is difficult because there is no visibility into how much space, power, cooling, and port capacity is available. Remote data center managers don't know where the best place to deploy new equipment is and manual spreadsheets and diagrams are error-prone and difficult to manage.

Finally, improving the productivity of people is arduous because remote teams lack tools that drive collaboration and data sharing. This leads to data siloes, multiple manual data entries, and inaccurate data that can cause larger problems like downtime and stranded capacity.



### What role does automation play in addressing the above challenges?

Automation can help alleviate many of the pain points of modern data center management.

Maintaining uptime is easier with the aid of automatic alerts of potential power and environmental issues. Data center managers can set warning and critical thresholds on the live measured readings from power meters and environmental sensors. Then, upon a threshold violation, you will be the first to know of conditions that may cause downtime so you can proactively remediate the issue before there is a serious problem.

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By the same token, you can increase energy efficiency by being automatically notified when temperatures reach your lower thresholds, signifying that you are overcooling and wasting energy. Then, you can raise your temperature set points to save energy and money.

Finally, automation can dramatically improve productivity by saving time and improving data accuracy. Integrating data center management tools reduces manual data entry and breaks down information silos, giving data center teams more time to work on strategic projects, get services online faster, and collaborate around shared data to drive better decisions.

#### In what ways can data center managers introduce automation to their management practice?

Our customers are the most modern data center managers in the world, and we've been fortunate to witness first-hand how they are introducing automation into their management practice.

At a recent customer event, a customer presenter early on in their automation journey said, "What we're trying to do as an organization is to get out of the data world and into the information world."

The way they were achieving that was to make DCIM software "the center of the universe for the data center."

That is the story we hear from customers who are successfully implementing automation.





With a second-generation DCIM tool that has fully documented and open APIs, data center managers can easily integrate with their CMDBs, ticketing systems, BMS, and many other data center management tools. Then, they can automate virtually anything they desire such as provisioning and orchestration, virtual machine management, parts management, and decommissioning. They can also enjoy all the built-in automation capabilities within their DCIM tool such as thresholds and alerts and scheduled email of charts and reports.

### How can automation assist with device power budgeting?



First, consider the traditional approach to device power budgeting and rack power capacity planning. Data center professionals often derate the server nameplate value to 60% or 70% to allow for a safety margin. This process is manual, estimated, and largely inaccurate. The result is excessive stranded capacity.

This process can be entirely automated with our patented Auto Power Budget feature. Auto Power Budget automatically calculates an accurate power budget number for each make and model instance of a device based upon the actual measured load of that device in your environment running your applications. Power budget numbers are automatically updated every week to ensure a high degree of accuracy.

With this feature, Comcast was able to get 40% more utilization out of their rack power resources and eBay saved \$120,000 in a single project by reducing the number of cabinets needed to deploy new services.



*"From an ROI perspective, it's massive for us. We're getting 40% more usage out of our facilities and power sources."* 

Michael Piers | Senior Manager DCIM/Tools
Comcast

## What trends do you expect to see looking ahead when it comes to automation in data centers and how can organizations prepare in order to stay ahead?

I expect to see more adoption of data center management tools that are open and ready for integration with out of the box connectors, along with improving process maturity to enable forward thinking data center managers to drive automation in their operations.





By integrating systems and leveraging automation capabilities in their tools, our customers are saving time and dramatically simplifying data center management. The best practices that they are pioneering are getting noticed by other data center professionals.

To prepare, organizations should begin researching how these leaders are leveraging automation to enable a single source of truth, eliminate human error, improve collaboration, increase the utilization of existing resources, maintain uptime, improve workflow and productivity, and more.

To stay ahead, organizations need to understand which of their unique pain points can be resolved by automation and deploy modern data center management software that will help them get there.

### Part 3: Second-Generation DCIM FAQs

#### What is second-generation DCIM?

Second-generation Data Center Infrastructure Management (DCIM) software, also known as DCIM G2, is the class of software that has emerged from legacy DCIM products to dramatically simplify data center management.

This next generation of DCIM resolves the shortfall of functionality experienced with legacy DCIM tools. It provides the capabilities and features data center managers want along with an elegant web-based user interface that gets widely adopted.

### What is driving the need for second-generation DCIM?

Modern data centers are constantly changing, and traditional management tools no longer get the job done.

Intelligent rack PDUs and other smart devices with sensors are becoming ubiquitous. These devices collect a massive volume and variety of data that must be monitored and analyzed.

Data centers are now distributed across many locations such as colocation, edge, and retail making a remote management tool a must-have.

Organizations are consolidating data centers and virtualizing servers to increase efficiency, and they need a tool to enable them to do so intelligently.







#### What are the pain points and pitfalls of first-generation DCIM?

When Sunbird was formed, we spoke to many customers of first-generation DCIM tools to learn about their pain points. Interestingly, we kept hearing the same stories.

The tools are difficult to deploy or require additional clients. Critical features are missing, incomplete, or do not work as expected. Features are modularized and require additional purchases. The user interfaces are outdated and hard to use. The performance is slow. They cannot scale to accommodate the number of devices in modern data centers. The support is terrible.

We listened to these pain points and wanted to do something about them. That's when second-generation DCIM was created.

#### What sets second-generation DCIM apart?

While legacy DCIM tools are adequate for some of the most common daily tasks faced by today's data center managers and operators, second-generation DCIM improves on its first-generation counterpart with enhanced versions of the monitoring and operations features in legacy DCIM tools as well as new functionality for modern data center environments.

Second-generation DCIM deploys in half the time of first-generation tools and requires significantly fewer resources for a fast return on investment.

It's extremely easy to use with an elegant, intuitive design that simplify a data center manager's most common tasks.

It provides zero-configuration analytics in which pre-built dashboards, charts, reports, and visual analytics for the most important data center KPIs are available out of the box. Shared dashboards and team views enable data-driven collaboration and smarter decision-making.

Second-generation DCIM comes with free APIs and connectors that make it easy to drive automation via integration with other tools.

It offers extreme scalability that can handle millions of assets, billions of data points per day, and thousands of users.





White Paper

Other key pillars of second-generation DCIM are that it offers full suite of capabilities for complete data center management, it is vendor-agnostic and works with virtually all third-party meters, sensors, and software, and it leverages AI and machine learning capabilities to help optimize the data center.

#### What tools can be integrated with second-generation DCIM?

Second-generation DCIM features free APIs and customer-configurable connectors that enable integration with most other tools that have the appropriate APIs. This automation via integration eliminates double entry and reduces manual effort.

For example, integration with VMware helps data center managers easily identify and track server resources that support VMware virtual machines.

Integration with CMDBs such as ServiceNow, BMC Remedy, Ivanti/Cherwell, and even homegrown systems is also popular. Customers can exchange asset information between their DCIM tool and nearly any application that exposes their REST APIs. In many cases, this integration can become operational within an hour.

An exciting new type of integration is with ticketing systems. If an organization already has a ticketing application such as Jira or ServiceNow that they use to track their data center changes and incidents, they can now push those automatically to their DCIM to initiate the workflow process. The tickets can also be automatically updated from their DCIM. This drives automation like automatically closing the ticket once the work is completed.

Leading data center professionals are also utilizing Dev Ops tools like Jenkins and Chef to integrate their DCIM software with applications like Jira, Slack, and Splunk. They are automating everything from provisioning and orchestration to parts management to back-office processing. The possibilities are endless.



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#### How do you quantify the ROI of second-generation DCIM?

The most modern data center managers in the world use second-generation DCIM to maintain uptime, increase the efficiency of capacity utilization, and improve the productivity of people. There are many ways to measure the return on investment that they are seeing.

With their first-generation DCIM tool, Paddy Power Betfair had 5 to 10 users. After they switched to second-generation DCIM with greater reporting capabilities and data democratization, colleagues outside of the data center team wanted access to their system. Now, they claim 80 to 100 users, about a 900% increase. The data center team is now further elevated in the organization.

Users of second-generation DCIM also report greatly improved accuracy of their assets and connectivity. To confirm an asset's location, they no longer have to either physically visit the data center, wait on slow and clunky first-generation DCIM, or rely on manual and error-prone spreadsheets. Second-generation DCIM enables an always-accurate view of what's in the data center and where it is. With modern DCIM, Metronom spends 90% less time checking equipment and UF Health Shands improved asset tracking efficiency by 50%.

Organizations are also significantly reducing operating expenses by identifying and utilizing stranded capacity. By getting the most out of their existing resources, they can defer buildouts of new server-ready cabinets that cost \$15-20,000 each. Customers are achieving this by leveraging Auto Power Budget, a second-generation DCIM feature that automatically calculates an accurate power budget number for each make and model instance of a device based upon the actual measured load of that device in its environment running its applications. With this feature, Comcast gets 40% more utilization out of its existing resources. eBay can deploy projects with 33% fewer cabinets, saving them \$120,000 in a single project.

Finally, data center managers are leveraging second-generation DCIM to help meet their corporate sustainability goals. For example, Vodafone uses DCIM to accurately measure, monitor, and document the environment and power telemetry in their data centers. Then, they can intelligently implement strategies like raising cold aisle temperatures to save large amounts of energy and money.

### Call 732.993.4476 or visit SunbirdDCIM.com

Sunbird Software is changing the way data centers are being managed. With a focus on real user scenarios for real customer problems, we help data center operators manage tasks and processes faster and more efficiently than ever before, while saving costs and improving availability. We strive to eliminate the complexity they have been forced to accept from point tools and home grown applications, removing the dependency on emails and spreadsheets to transform the delivery of data center services. Sunbird delivers on this commitment with unexpected simplicity through products that are easy to find, buy, deploy, use, and maintain. Our solutions are rooted in our deep connections with our customers who share best practices and participate in our user groups and product development process.

Based in Piscataway, NJ, Sunbird serves over 1,850 DCIM customers worldwide. For more information, please visit SunbirdDCIM.com.

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