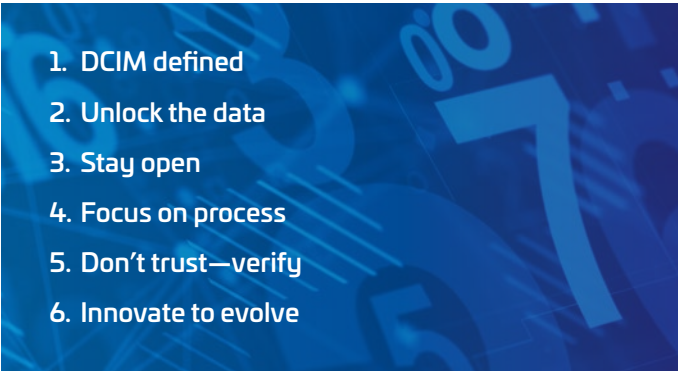# The CommScope
Guide to DCIM

COMMSCOPE®

The CommScope Guide to DCIM

As a global leader in data center infrastructure, CommScope is at the forefront of innovation in the management of physical infrastructure in the data center and other enterprise environments. In the CommScope Guide to DCIM, we continue to share what we've learned on our path to leadership.

Whether you're exploring a DCIM deployment right now or planning to, we invite you to roll up your sleeves and use this document as a source of information, inspiration and insight. This guide is designed to help you:

- Focus on what's real in the DCIM marketplace and ignore the claims

- Leverage the true nature of DCIM as an open solution—one that offers extensible business value without vendor lock-in or proprietary constraints

- Use DCIM to optimize operational efficiency and transform your data center's physical infrastructure into a strategic asset that drives value and profitability—not only inside the data center but across your entire enterprise.

The CommScope Guide to DCIM is organized into six easy-to-read sections:

1. **DCIM defined**
2. **Unlock the data**
3. **Stay open**
4. **Focus on process**
5. **Don't trust—verify**
6. **Innovate to evolve**

Each section represents the insights and experiences accumulated by the CommScope DCIM team over the years. Through our industry-leading iTRACS software suite, we've not only helped shape the development of the DCIM market, we've also learned some valuable lessons regarding what makes for a valuable DCIM solution. These are the insights and experiences presented here.

The economic impact of the iTRACS® platform can be measured in three ways: reducing OpEx, deferring CapEx and enhancing business output (revenue, customer transactions, etc.).

The iTRACS DCIM software suite provides holistic management of the physical ecosystem—including both IT and facilities—with a dynamic understanding of the complex interconnectivity between assets, systems and workflows. This expertise helps decision makers better manage their physical infrastructure to reduce operational costs, defer capital expense and ensure maximum sustained business impact.

The iTRACS platform provides a robust solution to your major infrastructure management challenges—from asset and connectivity management to resource management (space, power and cooling) and capacity planning. iTRACS understands how a move, add, change, removal, or failure of a single device in the ecosystem affects the performance of all other devices and conditions in the environment. Users can see, understand, manage and optimize these dynamics continuously in a real-time visualized 3D environment to serve the needs of the business.

This capability is available both inside the data center and in intelligent offices, campuses and commercial facilities around the world.

DCIM defined

Every data center owner and operator faces challenges unique to their environment. They tend to define DCIM as it relates to their environment. So, from power monitoring to IT asset management to enterprise-scale capacity planning, DCIM means many things to many people. But a central truth about DCIM is becoming increasingly obvious to data center owners, operators and users:

True DCIM is not a point product, a monitoring tool, or a subset of discrete management capabilities. It may use these tools and data feeds to expand and enhance its overall value, but it is not limited to or defined by them.
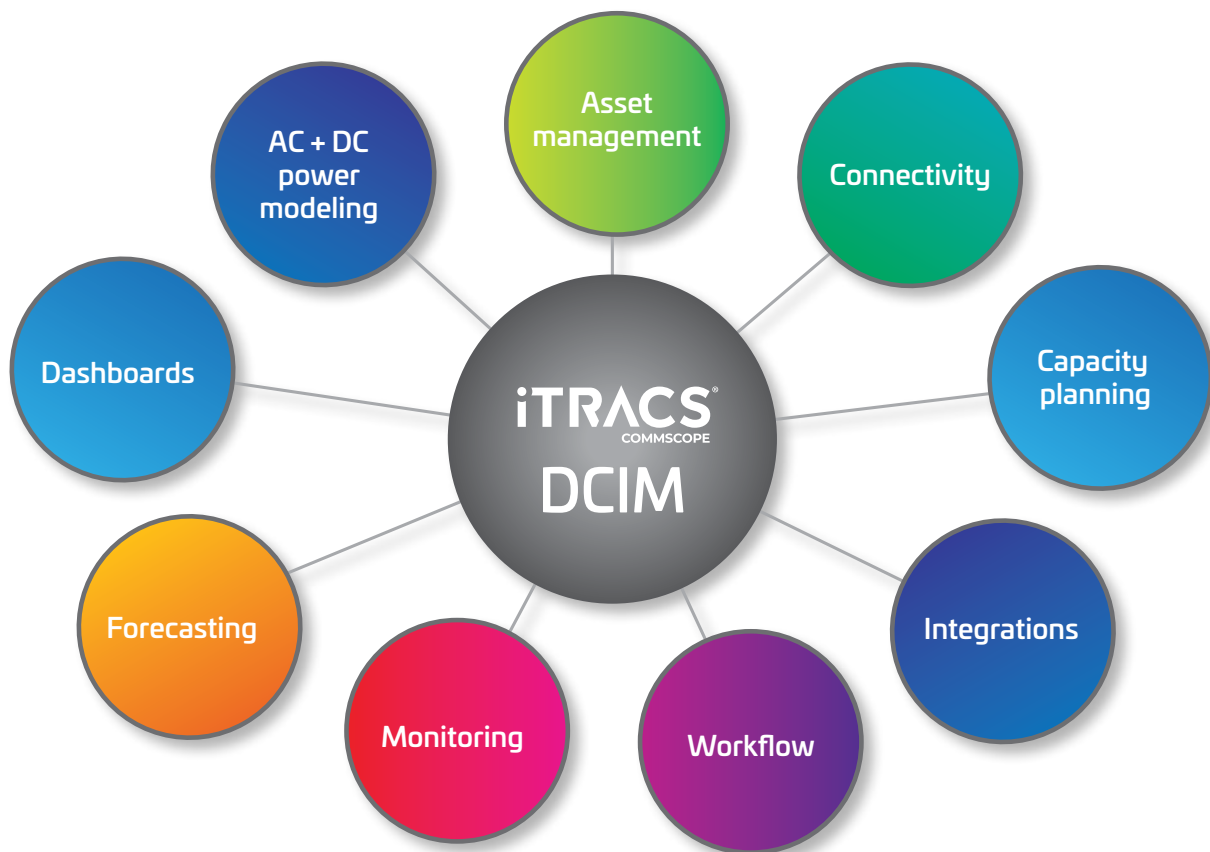
Rather, it is an open systems management-based platform that gives users holistic insight and control over the physical ecosystem. Its mission is to help the data center

serve the needs of the business with impact, agility and cost efficiency—no matter how fast those needs are changing. Point products are inherently incapable of achieving such broad results.

DCIM scope of value

Ultimately, a DCIM solution must provide value across the entire range of IT and facility systems management. This thought has been emphasized and echoed throughout the industry—and for good reason: The true value of DCIM is in its ability to enable the data center manager to see, monitor and control the data center's physical infrastructure as a single, dynamic and complex ecosystem.

## The DCIM scope of value includes the following functional areas:

Power management	Monitor, measure and model precisely how and where AC and DC power are being rout-ed and consumed	• Facilitate the transition from AC to DC or DC to AC • Model the entire power chain from device to the main • Manage power paths using circuit tracing • Use fail-over analysis to detect potential power issues
Monitoring	Holistic, real-time monitoring of your day-to-day opera-tions—IT and facilities	• Eliminate surprises • Monitor and manage daily data center operations • Manage and resolve events in real time
Dashboards	Organize and customize mon-itored data to make it more actionable	• Create custom dashboards based on department, process, staff position, asset class or location and more • Use dashboards to drive customized reporting
Forecasting	Use historical and real-time data to anticipate future re-quirements for capacity, power and space	• Combine data sets to predict future capacity needs • Project available usable space to confirm growth plans • Map past power use to anticipate future gaps or issues
Workflow	Plan, execute and verify in-frastructure changes to min-imize disruption of service and optimize efficient use of resources	• Combine data sets to predict future capacity needs • Project available usable space to confirm growth plans • Map past power use to anticipate future gaps or issues
Integrations	Extend your DCIM intelli-gence by integrating with groups and systems beyond the data center	• Share DCIM data with other intelligent devices and programs • Import data from leading virtualization and ITSM vendors • Export DCIM data to ERP, CRM, financial systems and more
Capacity planning	Forecast and plan power and space needs and track growth of IT portfolio and resource usage	• Save millions on your next build-out • Delay, defer, and/or eliminate potential CapEx • Use actual vs. projected growth to know when to expand • Make more informed decisions regarding cloud, colocation, MSP migration
Connectivity	Monitor and manage port-to-port network connectivity, including network circuits	• Ensure all installs are done right the first time • Boost capacity by repurposing "ghost" switch ports • Improve mean time to repair (MTTR) by locating and resolving connectivity issues such as unscheduled changes
Asset management	Track, manage and optimize the use of assets across their entire lifecycle	• Cut your asset costs • Reduce OpEx for IT asset portfolio—across the board • Reduce IT audit and compliance costs

A roadmap that grows as you grow

Rather than deploying a comprehensive DCIM solution that addresses all nine areas from the start, many data center operators choose to begin with one or two key capabilities. This, of course, requires a solution that allows you to begin your "DCIM journey" in any functional area, then broaden your DCIM initiative as your needs and comfort level expand. It doesn't matter where you start, so long as you remain focused on where you want DCIM to take you. You need a DCIM vendor that understands and can support you—with the right technology and resources—in this journey. So, as you evaluate DCIM vendors, ask yourself:

Do they have an open systems management-based suite that has proven it can get you there?

Do they have a vision and product roadmap that supports the entire DCIM scope of value?
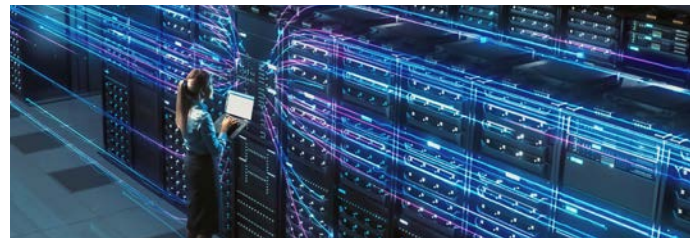
CommScope's perspective

CommScope understands the importance of a comprehensive DCIM suite solution that offers the flexibility to expand capabilities over time. Our iTRACS solution offers a flexible, extensible approach to DCIM encompassing the nine key areas of functionality. You can leverage what you need today and add capabilities at your own pace. The CommScope approach allows you to explore how to best leverage DCIM to drive economic impact for the organization today without overspending up front or being trapped downstream.

Unlock the data

The DCIM market is full of self-proclaimed DCIM leaders who are happy to tell you how great they are, so here's our advice—don't get fooled by pretty pictures or colorful dashboards. DCIM is about the data behind those pictures. More specifically, it's about the data's comprehensiveness, interrelationships, integrity, and, ultimately, its value in helping you manage your physical resources and optimize your operational efficiency.

The big data of DCIM

There's a massive amount of data locked inside your physical infrastructure—buried in your devices and applications. This data isn't just about assets or power usage; it's about power, space, cooling, server utilization, business output, work per watt, facilities loads and much more. It's about literally millions of points of interconnectivity between assets, systems and resources—a physical ecosystem in a fluid state of change and evolution. Like any "big data," if it remains buried, fragmented, isolated, and/or indecipherable, then it is of little use.

A robust and comprehensive DCIM platform makes your infrastructure data:

- **Visible**—collected, aggregated and presented so it is meaningful and understandable

- **Interconnected**—enriched with the context of space, connectivity and time to provide a holistic understanding of the entire interconnected ecosystem

- **Socialized**—shared across IT, facilities, BMS and business communities quickly and ubiquitously

- **Actionable**—presented so it can be instantly acted upon in a dynamic and collaborative environment

By collecting, aggregating and analyzing data about individual assets and the interconnected environment, DCIM unlocks the value of your data and presents it contextually and holistically. The holistic view is absolutely critical in understanding the difference DCIM can make.

The amount of data collected from the physical infrastructure is increasing exponentially. But data isn't information—and the proliferation of data isn't insight. It's the interconnectedness and context of the data that counts.

No server is an island

All assets and systems coexist within an infrastructure environment that is highly interconnected and interdependent. Individually, their performance is directly impacted by the status and performance of other elements—the power chain, network chain, cooling, other IT assets and all the associated facilities and building management systems.

Infrastructure data is most relevant when it is presented to the decision maker in context, with an awareness of the interconnected whole and a complete real-time view into the environment—not just a portion of the environment over a "slice" of time. This is how data becomes insight.

To understand and manage an interconnected environment this complex, you need a convergence of relevant data from multiple points across the ecosystem—context-rich data coming from very diverse sources that gives you:

- **The asset itself**—model, buy/lease information, its line of business (LOB), applications and other core data

- **Its power usage and environmentals**—real-time power consumption, thermal readings, etc.

- **Its spatial context**—where the server is physically located

- **The entire power chain**—from the transformer on the street down to every device on every rack: all assets, circuits and power-related interdependencies

- **Complete end-to-end network connectivity**—all interconnected assets, their positions in the network and all switching and patching interdependencies

- **The disposition of every asset in time**—the state of the asset and its impact on the environment at any point in time: past, present, or future

Turning data into insight

To present data in this rich interconnected context, you need a DCIM vendor with expertise in three key areas:

> **Interconnectedness**—an intuitive understanding of how every asset impacts everyother asset in the complex web of interrelationships and interdependencies that lies at the heart of physical infrastructure.
>
> **Visualization**—the ability to visualize this complex interconnectivity in a navigable "point and click" model that makes it instantly understandable, meaningful and actionable as holistic insight—not fragmented data sets.
>
> **Open systems-management platform**—a flexible foundation that lets you manage and optimize this interconnected environment

The bottom line: DCIM requires a deep understanding of the interconnectivity and interdependencies in the physical layer— and how to manage those interrelationships to optimize the performance of the logical layer. If your DCIM vendor doesn't have a proven strategy to unlock the big data of DCIM—and turn it into actionable insight transforming how you manage physical infrastructure—then you may have a lot of pretty pictures. But you have the wrong vendor.
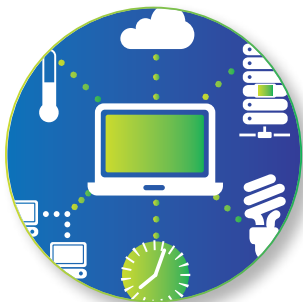
Stay open

There's no shortage of marketing noise in the DCIM marketplace. Claims of performance and capabilities range from basic to bewildering—with new solutions entering the fray every month. So, which capabilities, designs and benefits are core to any successful DCIM initiative and which are simply background noise? In answering that, look at the best-selling DCIM solutions and ask yourself what they have in common. What you'll find is that the most successful solutions use an open systems-management approach to DCIM vs. a proprietary approach.

An open software platform—based on an extensible systems-based architecture—lets you manage the physical ecosystem holistically without fear of proprietary or technology dead-ends, unnecessary cost overruns and other vendor-related restrictions. One example is the logical layer, where an open systems-management approach has yielded immeasurable gains in productivity, cost efficiency and revenue impact. Open systems-management DCIM takes that same philosophy and applies it to the physical layer. As a result, it is able to:

- Access, aggregate, understand, share and leverage the big data of DCIM, turning it into holistic insight that drives knowledge-based decision making
- Keep the physical layer holistically aligned to the needs of the logical layer in an ever-shifting technology landscape
- Support systems-to-systems and workflow/process integrations, not just data-to-data
- Keep pace with the relentless march of convergence as the worlds of IT, facilities and BMS continue to merge into a single global enterprise infrastructure

As you evaluate your options in the marketplace, there are two key attributes regarding open design. Does it support diverse and varied applications and the exchange of data across the enterprise? Does it leverage the inherent data center benefits of a systems-managed approach? Let's take a closer look at both of these.

Open architecture

A pure software suite based on an open architecture allows any data point to be fed into the suite; or, using an open data exchange framework based on industry-standard interfaces and protocols, supports the bilateral exchange of data between the DCIM and other areas outside the data center. Data can be collected, aggregated, managed and visualized in real time from virtually any outside system or source.

Just as importantly, an open software suite is not constrained by hardware legacies, technologies based on point products, module-based frameworks, or other outdated technology approaches. It is neither box-centric nor IT-centric nor facilities-centric. In a discipline as broad and fast-changing as DCIM, that is critical.

A systems-management approach

A systems-management architecture means you and your team have the capability to handle specific tasks or work to optimize individual systems, while maintaining holistic vision and control over the entire physical ecosystem. Different solution components can be mixed and matched within the systems-management
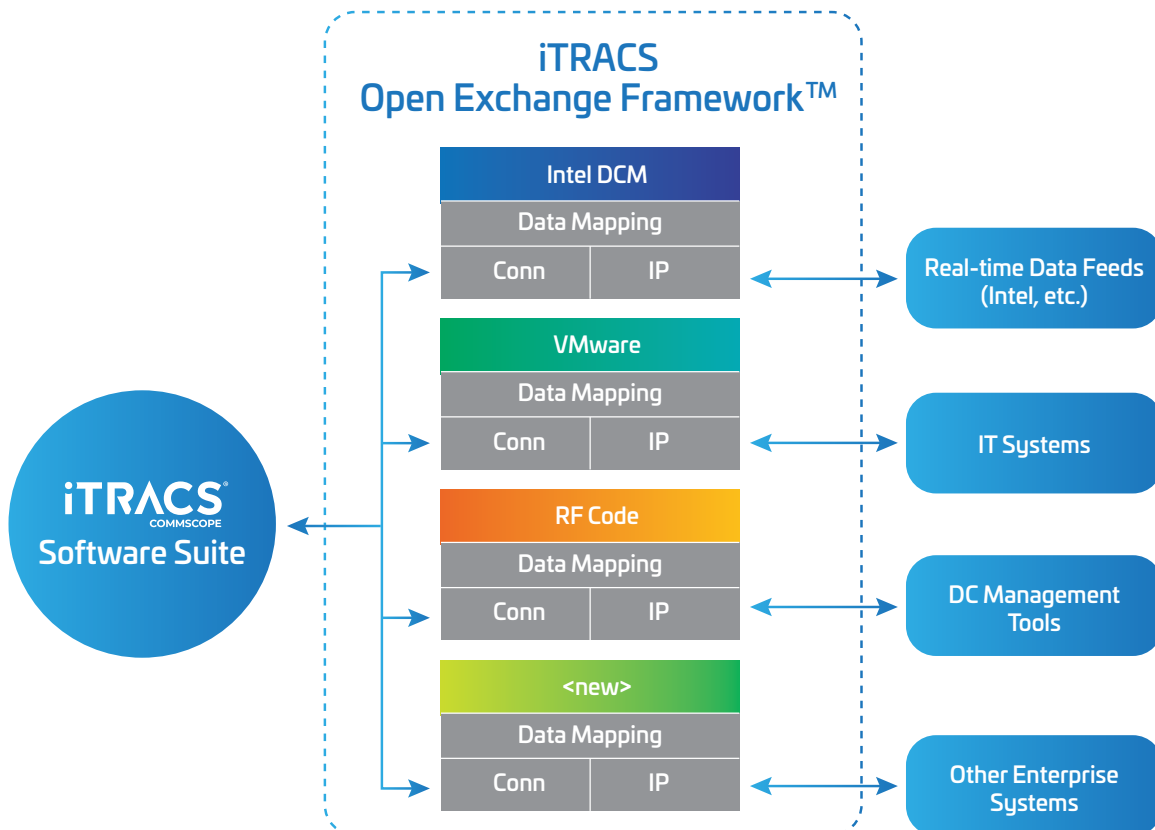
environment for a high level of interchangeability, scalability and extensibility. The environment continues to grow to meet your needs, unconstrained by inherent limitations or predefined functionality.

DCIM vendors who cannot offer a systems-management approach put enterprises like yours at risk. Because, when it's time to expand, you may be stuck with an inherently limited product that costs a fortune to evolve—or, even worse, a system you must abandon entirely because it will never do what you need it to do.

CommScope's perspective

iTRACS Open Exchange Framework™ is the information highway that connects all outside data sources, systems and workflows to the iTRACS software suite. It provides for the seamless multidirectional "any to any" exchange of information.

Using this framework technology, iTRACS can send or receive any data point from any other vendor or system using open industry-standard interfaces and protocols. The framework simplifies the entire interchange with a standardized interface that speeds integrations, eliminates risk and fosters rapid wins for

the customer. The framework leverages a common foundational approach to integrations, allowing you to incorporate new data sources, enterprise systems and business workflows. Specifically, the iTRACS DCIM Open Exchange Framework supports:

Data exchange—integrating the underlying infrastructure data

System-to-system synchronization—collaborating with enterprise systems

Workflow and process integration—accelerating business processes within and relating to the data center

Far more than an API, partnering program, or data aggregation tool, the framework is a standards-based information-exchange protocol with enterprise-wide implications:

- Open and multidirectional—supports free interchange with anyone and everyone, including other DCIM vendors

- Creates a win-win—iTRACS ecosystem is enriched with new streams of data while the customer's business systems and workflows are enriched by pulling information from iTRACS back into their environments

- Creates new opportunities to drive operational efficiency from the infrastructure investment

- Speeds integrations and mitigates risk for vendors, fostering the development of an open vendor ecosystem

Focus on process

The best technology by itself won't lead to success unless it is paired with an equally sound process for deployment and proven roadmap for success. It's easy to get so caught up in the technology of DCIM that you lose sight of how it will be implemented and maintained. To avoid this mistake, continually revisit the primary questions:

> **How will the deployment impact your team?**
>
> **Can the vendor fit your existing workflows?**
>
> **How much "heavy lifting" at your end will DCIM actually require?**

The answers, of course, depend on the vendor you are working with. The ideal DCIM vendor will have proven expertise in both technology and the process used to deploy it. To get the information you need, ask your DCIM vendor the following questions about their implementation process.

- Do they have a proven step-by-step methodology for efficiently deploying the software?

- What best practices are they using to execute that methodology?

- With what level of rigor?

- How seamlessly can they fit into you existing processes to minimize disruption?

- Can they adapt to your current workflows?

- Can they deliver quantifiable results in your environment?

- What is their estimated time-to-value and what quick wins can they assure?

- How will they handle long-term change as your needs and KPIs evolve?

- Do they have a DCIM governance plan?

Finding the right DCIM vendor partner

Proof of concept (POC) gives you unparalleled insight into the DCIM vendor's character, values, approach, skill set, ability to execute, and, above all, their competence. It requires the DCIM vendor to do a genuine piece of work. But you have a job to do, too. Your responsibility is to look under every rock, peel every layer of the onion and make sure you understand exactly what the POC is "telling you" about that vendor.

Ultimately, you're looking for a DCIM vendor partner who is an experienced expert in both information systems and data center infrastructure systems; a company that truly understands your environment, challenges and opportunities. The right DCIM vendor with the right expertise can transform the complexity of infrastructure management into a predictable, repeatable process that delivers:

- **Quick wins**—short-term value delivery that demonstrates the partnership is working and the vendor is delivering on their promises.

- **Continuous value**—an ongoing cycle of performance that demonstrates the vendor has the wisdom, resources and innovativeness to deliver business value to you as far into the future as you need them.

- **Risk mitigation**—A predictable, cost-efficient and repeatable "self-learning" deployment process that offers stability, reliability and continuous quality improvement as your DCIM capabilities grow and evolve.

- **Collaboration**—A healthy working relationship between all of your stakeholders in the new converged world of infrastructure management—IT, facilities, building management systems and business. This may be the most positive operational shift of all!

So be diligent in asking the right questions—but don't fall into paralysis by analysis. If you look carefully, you'll find the robust, enterprise-class DCIM with the technological capabilities and deployment roadmap you're looking for.

Finally, insist on a variety of customer references of recent deployments similar to yours in size and scope. A reference for a single-site 100-rack deployment is useless if you're scoping a four-site, 4,000-rack challenge.

How CommScope ensures your long-term DCIM success

The iTRACS Customer Value Lifecycle is a best-practices deployment and enablement methodology designed to help you save money, eliminate risk and obtain maximum return on your iTRACS DCIM investment. The lifecycle consists of four interconnected steps—Discover, Plan, Empower, Optimize. Its cost-saving techniques are available from day one for as long as you're part of the iTRACS community.

Don't trust—verify

DCIM is an exciting and still-emerging technology, with a litany of promises from vendors. The best—and sometimes only—way to objectively evaluate such claims is to request a proof of concept (POC).

Proof of concept

Some vendors will tell you a POC, while helpful, isn't always necessary in the evaluation process. Ignore them. Cut through the buzz and make sure reality—not myths or marketing hype—guides your vendor selection. Assume nothing—verify everything.

For instance: a DCIM vendor assures you they can assimilate data from any source and then help you understand and use that data. Have them prove it. Give them a specific challenge involving a POC designed for your infrastructure and processes. Then track the data comprehensiveness and accuracy from the POC.

Decide what DCIM characteristics or capabilities are important to you—whether that's managing energy across the entire power chain, tracing network connectivity down to the individual port level, or using "what if" scenarios to guide capacity planning and demand management—then put the burden of proof on the vendor to demonstrate they can deliver.

Also, pay attention to how long the POC takes from first moment of engagement. What was the experience like? How many roadblocks came up? What does that tell you about the DCIM vendor's process, their people and their culture? A POC is a trial run, a chance for you to kick the tires and satisfy yourself that the vendor can, in fact, translate their "expertise" into speed and quality of delivery.

Innovate to evolve

Looking to move the needle on operational efficiency, in an environment as complex as the data center? You'll need a DCIM partner who can provide innovation that's not only consistent but collaborative, informed by your input and driven by goals you set.

As an evolving technology, DCIM must continually innovate to stay relevant. That means constantly looking for new ways to use infrastructure data to reduce OpEx, defer CapEx and optimize the business value of your data center to the enterprise. It starts by listening carefully to what you need—and then finding a way to get it done, even if the solution seems counterintuitive.

For example, popular thinking suggests that the newer a data center is, the more efficient it is. So your inclination may be to invest in upgrading and updating parts of your facility in order to boost efficiency. A savvy DCIM partner, however, will begin by understanding precisely how you measure efficiency and what your goals are. Then they will align your DCIM solution to support both. Why? Because they know that efficiency has less to do with age and more to do with how it is operated. With the right insight and control an older data center can run as efficiently as a new one, or even more so. The right partner will help you leverage DCIM in order to:

- **Get every ounce of capacity and performance** out of the existing physical ecosystem

- **Reduce OpEx**—the costs associated with power, space, cooling and other resource utilization
- **Defer or eliminate CapEx**—extend the life of the data center by driving efficiency in ways that were previously unthinkable

Innovate with CommScope

As a global innovator, CommScope has a legacy of excellence in three areas of expertise that are critical to success in DCIM:

Innovation—Helping customers keep their infrastructure agile in a global business landscape that never sits still

Interconnectivity—A rich history of driving the intelligent management of complex, interconnected infrastructure environments

Open technology—iTRACS offers an industry-leading, open-architecture, systems management-based approach, while CommScope has a long legacy of driving openness through its standards leadership

We understand a simple but unforgiving truth about technology—one that applies to customers and vendors alike: If you stand still, you'll be left behind.

iTRACS DM solution demonstrations

These are real-world data centers modeled and managed in the iTRACS software suite for enterprise, colocation and MSP customers around the world. Just click on the links below to view the videos.
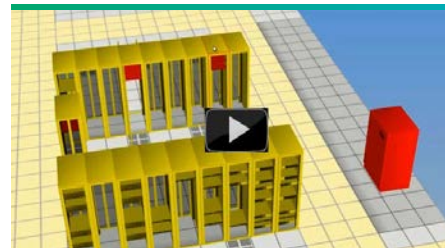

Capacity utilization and planning

Learn how to increase capacity without expanding your existing data center footprint.

Ghost servers

Learn how to use DCIM to find and eliminate ghost servers in order to lower your energy consumption, reduce costs and boost efficiency.

Intelligent capacity planning

Discover the crystal ball that can give you real-world insight into the future, automatically and take the guesswork out of capacity planning.
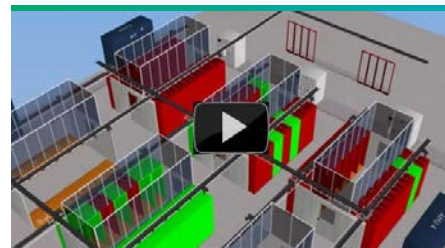

Faster root cause analysis

Take a deep dive into event forensics in order to find and resolve issues before they affect performance.
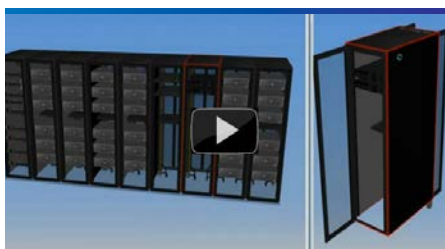

Optimizing energy efficiency

See how you can reduce energy costs up to 40 percent by using DCIM to manage and optimize energy efficiency across the entire physical infrastructure.

Asset tracking and management

Ensure your assets are always where they're supposed to be and accelerate time to value while decreasing risk.

Intelligent commissioning

Get the inside story on generating higher ROI from your assets with DCIM-powered automated commissioning.

CommScope pushes the boundaries of communications technology with game-changing ideas and ground-breaking discoveries that spark profound human achievement. We collaborate with our customers and partners to design, create and build the world's most advanced networks. It is our passion and commitment to identify the next opportunity and realize a better tomorrow. Discover more at commscope.com.

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Visit our website or contact your local CommScope representative for more information.