

FNT

// simplify complexity



TOP-DOWN



BOTTOM-UP

RETHINKING **DCIM**

**GUIDE TO UNDERSTANDING
TOP-DOWN DCIM AND WHY IT MATTERS**



IN THIS WHITE PAPER:

Data centers are essential for the success of any modern business. Accordingly, their performance and availability are increasingly moving up the agenda of customers and senior management alike.

But it is no longer enough to simply use space, power, and cooling as metrics. Given digital transformation and the central role of IT in an organization's ability to deliver, data centers need to provide maximum support for business transactions. Traditional tools for data center infrastructure management (DCIM) have reached their limits. What is needed are integrated tools, standards, and data models that enable seamless, efficient management of IT infrastructure from top to bottom. This white paper looks at the differences between tool generations, what characterizes modern DCIM solutions, and why managing isolated solutions soon runs up against functional limits. The core question is: How can I future-proof my data center?

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Setting up a future-proof data center

Why not all DCIM is equal

Data centers continue to grow in significance and complexity. Efficient infrastructure management in the face of stagnating or shrinking resources and budgets is a huge challenge, with rapid technological change and the blurring of boundaries through cloud adoption adding to the difficulty. To deal with this changing world, companies need effective, integratable tools that are future-proof and able to cope with new requirements.

Most data centers are today part of a hybrid ecosystem encompassing physical and virtual resources that are located both on-premise and in a public and/or private cloud. Hybrid infrastructures offer companies more options than traditional infrastructures, but they also bring increased complexity because different technologies, storage locations, service providers, billing models, and dependencies between the individual infrastructure elements need to be brought under one umbrella.

Businesses find that they soon hit the limits of traditional DCIM tools. The problem is that even though DCIM systems are often regarded as being all more or less the same, there are fundamental differences. While some vendors operate “out of the IT cabinet”, others are rooted in building management or building control systems. The result is that every tool has its own focus and its own individual strengths (see “Top-down vs. bottom-up” box).

NEW DEMANDS FOR FUTURE IT

In tomorrow’s IT world, software needs to support overarching processes, enterprise-wide data exchange, and flexible integration into value chains. While power con-

sumption, cooling, and space are important criteria for data center performance, the actual services are equally important and are delivered on the layers above. That’s why it’s important for a DCIM tool to provide full management of the IT dimension, from the smallest assets through to virtual servers in the cloud. Any company that has embraced digital transformation should avoid sticking with a solution that offers no value for digitalization. It needs tools that can handle change and are equipped to meet future demands.

MORE VALUE-ADD FROM IT

One of the drivers behind the IT focus of modern DCIM tools is the fact that more and more businesses are abandoning the idea that they need to operate their own data center. If servers and networks are moved to a colocation provider, that provider takes responsibility for the traditional data center KPIs. At the same time, a future-proof DCIM solution enables companies to concentrate on issues that deliver more added value. The scope thus shifts from a single data center location to more distributed processes, which cannot be orchestrated using hardware-oriented DCIM tools.

HOLISTIC SAVINGS ARE THE NAME OF THE GAME

This trend has financial consequences, too. The opportunity to realize savings from bottom-up efforts that focus on hardware and physical aspects has been exhausted. Going forward, companies can only make fur-

ther meaningful savings through holistic optimization. This must include all non-physical elements, such as the virtual layer and application layer. A hybrid solution for digital infrastructure management can provide a transparent overview of the entire infrastructure and manage all the data in one place, thus eliminating silos and boosting data quality.

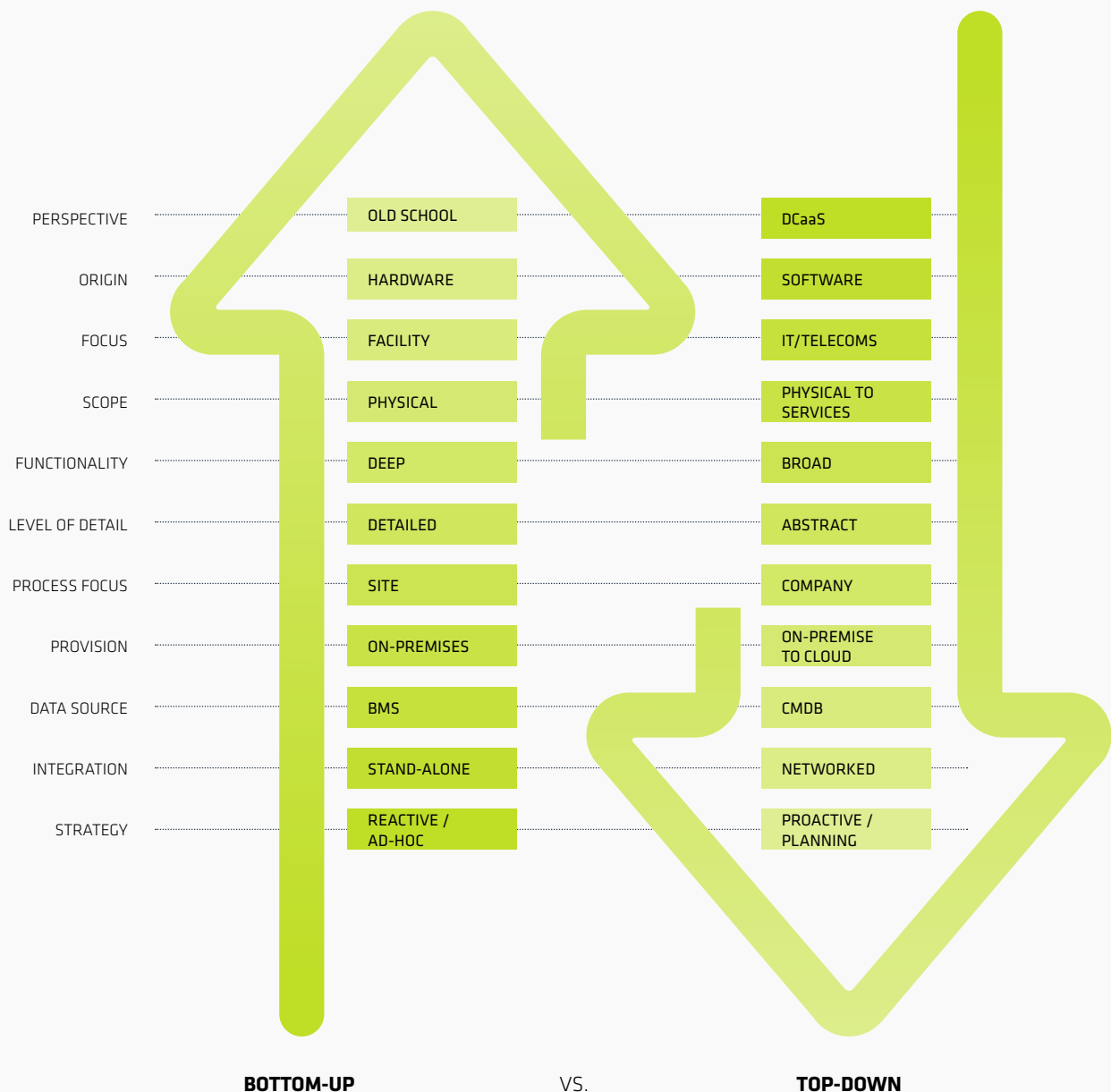
BETTER DECISIONS THROUGH ANALYSIS

Capacities, problems, qualities, and properties: holistic management means that rapid analysis of all documentation is possible – because all the necessary data is available, accurate, up to date, and interlinked. Direct access to relevant business information (e.g., on re-

sponsibilities or maintenance contracts) also supports decision-making processes. In addition, universal access to a single data source allows remote working across all IT locations. This approach also enables the business to move on from reactive monitoring and start proactively managing its infrastructure in a planned fashion.

The value added by a company's IT depends on a well-managed data center. Similarly, IT services only deliver value if they are well managed, but it is impossible to meet both requirements with a single tool.

A good understanding of the DCIM tool capabilities needed both today and tomorrow is essential for DCIM tool users.



How DCIM tools differ: origin and focus



DCIM: Top-down vs. bottom-up

COMMENT

In my many years as Head of Business Line DCIM, I have frequently found that customers compare apples with oranges when looking for a DCIM solution, albeit in good faith and often guided by consultants. They tend to focus on detailed aspects of the individual functional areas, while ignoring the fundamental differences between tool philosophies.

Based on their history and the tasks for which the solution was originally designed, my view is that modern DCIM solutions can be traced back to two different strategies:

- The first tools had their roots in the building control sector and were originally used to ensure proper operation of a building's power and air conditioning systems. From there, they moved into the IT space ("white space") and started to address the rack. The focus here is usually on a single, specific site. Due to their closeness to BMS/PMS tools, these solutions have very powerful monitoring engines and complex control capabilities. They are often only installed locally and were initially not networked or integrated.
- In contrast, other systems emerged from server or cable management scenarios and were adapted to manage IT and telecoms infrastructure across the enterprise. These have evolved beyond the rack and surrounding IT spaces towards the "grey space" and facility management. The focus of this group of tools is on monitoring all locations from the corporate viewpoint and less on individual data centers. A wide range of functions is typical here, e.g., with regard to standardized cross-location processes. Having said that, there is a somewhat lower level of functionality in some domains, e.g., less detailed control functions for air conditioning systems. Integration and networking have been a fundamental part of this group of products right from the start.

Based on the layer model, we can describe the first group as "bottom-up" solutions that have grown upwards from the facility into the IT systems, while the second group has developed "top-down" to deliver the required functionality.

The problems around choosing a DCIM tool often arise because although users draw up an extensive list of required functionality, they don't explicitly state which philosophy they want to adopt. It makes a huge difference whether you want to introduce overarching processes or just focus on one particular site.

The decision must also take account of future plans. DCIM solutions are often sourced in the context of constructing a new data center. In this scenario, it is frequently just this one location that is considered when choosing a tool, which can result in a solution that is found wanting further down the line because it cannot support the entirety of all data centers and the company's other critical IT infrastructure via overarching processes. It is also often the case today that companies use colocation spaces and edge locations. This too must be considered when choosing a tool because it may result in other, new requirements that do not apply if only a single location is being planned. The DNA of the various systems leads to fundamental differences in use and focus that are not apparent from a simple comparison of functions.

Oliver Lindner, Head of Business Line DCIM





Integration, scalability, standardization

What makes a DCIM tool future-proof?

Demands on data center operators have steadily increased in recent years. Today, it's no longer enough to simply manage power, cooling, and space. Additional requirements include the selection and management of new hardware platforms, complete virtualization and the adoption of suitable cloud concepts, management of network capacity, and the introduction of software-defined networking or network fabrics. As a complex ecosystem, a modern data center calls for a tool that can offer transparency into the entire IT landscape, solid planning, efficient processes, and automation.

If you want to run a future-proof data center, a central management hub and optimization platform that provides a comprehensive, integrated view of all resources is essential. But what exactly characterizes a future-proof DCIM tool?

COMPREHENSIVE DATA SET

Modern DCIM tools are able to manage all IT data in a central system. This covers the physical and logical layers through to virtualization, including all cable and network aspects and services. A more future-proof solution brings together data from several departments instead of documenting them separately in small, independent applications. This centralized approach guarantees the timeliness, integrity, and coherence of the data. Automatic plausibility checks to synchronize information and maintain quality are also a core requirement in the modern world. Holistic management permits faster analysis of the entire documentation because the data is available, accurate, and interlinked.

ALL SITES COVERED

Contemporary DCIM tools focus on breadth of functionality, rather than depth of functionality. This abstract view is based on the need to support enterprise-wide processes, among other things. With regard to data center cooling, for example, only basic data is needed, not a detailed inventory of fire suppression agents. From a corporate viewpoint, that is not a relevant metric for the IT process. The focus of traditional hardware tools is on building control for individual sites. It would be better to build a future-proof corporate DCIM tool on top of a building control system. That makes it possible to work with different building control systems at different sites, to integrate colocation, and also to manage cloud resources.

CHECKLIST: FUTURE-PROOF

- Standard software with powerful configuration options
- Modular and adaptable to suit requirements
- Available on-premise or cloud-based (as a service)
- Comprehensive system for all data center assets and resources
- Process-oriented support and documentation
- High quality documentation
- Consistent planning functions
- Efficient data integration and standard APIs
- No organizational or functional limits
- Vendor-neutral component library



STANDARDS OUT OF THE BOX

Modern DCIM software must set the standard for the company and provide a range of operational functions, while remaining adaptable where necessary and appropriate. These freedoms include things such as changing attributes or individual reports but not complete customization, which entails extensive and repeated adjustments. For example, it is often necessary to be able to reflect specific details about an organization in workflows. This includes aspects such as the distribution of tasks between the different teams or efficient integration with other installed systems.

Future-proof technology. The physical aspects of data centers changes only gradually over a period of five years, but expectations of software are a different matter entirely. The leap to 3D only happened recently, but today 3D depictions are already a given. There is currently much discussion surrounding the use of AR/VR in data centers and a few pilot projects have been successfully completed; applications of this type are real and are just a few quarters in the future. Another important development is machine learning, which will support forward-looking management. There are no practical out-of-the-box applications for non-expert users as yet, but this is just a question of a few years. For all modern use cases, a plat-

form is needed that provides the necessary data, from one or multiple sites. Ideally, the tool will provide data for other applications, such as via interfaces or through being preconfigured for specific use cases.

Scalability. A modern DCIM tool should be able to handle a variety of scenarios that can arise in any business: rapid growth, spin-offs, mergers, consolidation. Accordingly, it must be possible to roll out the application for new uses. For example, as a blueprint to new locations. The situation is similar with regard to licensing. What are the financial implications of buying additional copies? If the tool is deployed across the organization, it will be used by many employees. If more teams are able to use the same program, the better value it is for the business, while boosting interdepartmental cooperation.

Vendor independent. Specialist DCIM solutions from IT and network vendors or based on building control systems have a significant weakness: they are designed around the vendor's own products. In the real world, however, there are many shades of gray and a single-vendor IT environment is a very rare thing. If the vendor only includes its own hardware in the product catalog, the customer will have a problem in the event of an acquisition, for example. As such, cross-vendor libraries are a must.

SMART INTEGRATION

The IT environment is constantly changing, making it important that DCIM tools can be integrated inexpensively, easily, securely, and reliably. That is key for future-proof management of data center infrastructure. Unlike specialist solutions, which are static and can only communicate with each other, integration offers the necessary flexibility to take advantage of new opportunities and remain one step ahead of the competition. This is especially relevant with regard to “northbound” integration with higher-level IT systems, such as service management. Read more in our White Paper [“Future-Proof Your Data Center Through Integration”](#) ➔.

Active product maintenance. While all vendors update their tools, IT lifecycles have shortened considerably. In just a few years the “pizza box” evolved into blade server to converged systems, with the latter having now largely disappeared from the debate. Suppliers of traditional DCIM tools find it difficult to keep pace with the latest IT advances in a timely fashion. For instance, cable management functionality recently had to be retrofitted because a manufacturer had developed a new cassette technology for data center cabling. Tools must be able to reflect these evolutionary changes with minimum delay; just having a modern user interface is not enough.

SUMMARY

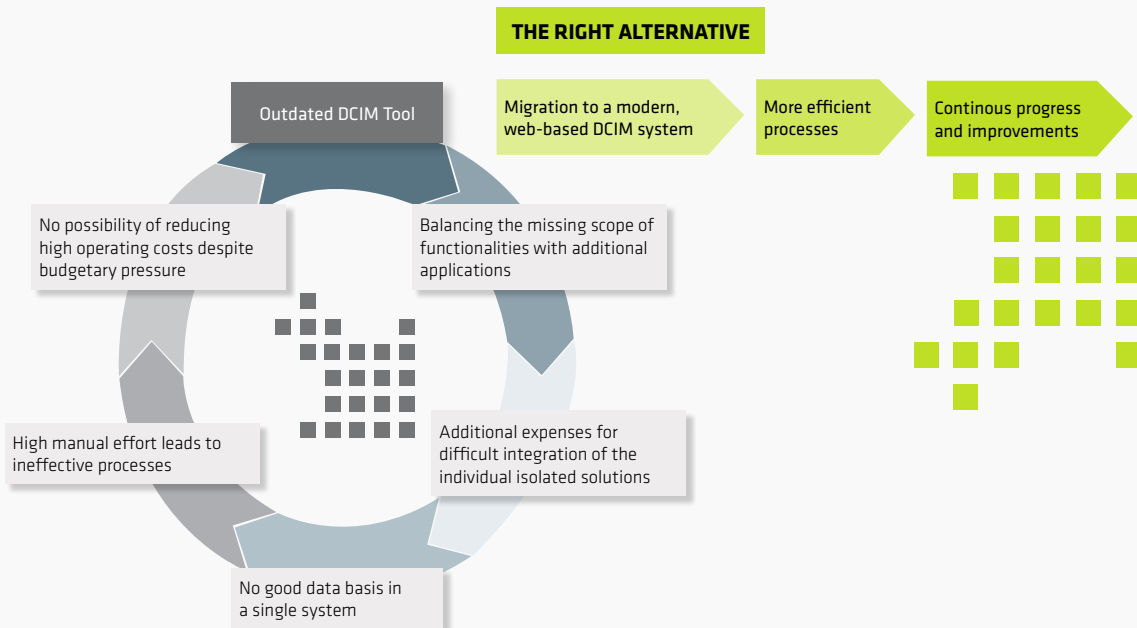
Does your current DCIM tool meet all the requirements? The functionality may be adequate for now, but your needs will change sooner or later. Keep in mind, it is nearly

impossible to find, evaluate, and implement a new, comprehensive DCIM solution quickly. The budget and tender processes alone can take a long time. As such, it is better to be prepared. Companies need to be able to react flexibly to today’s global markets. Adapting outdated software is a very difficult, very slow business, that can block necessary progress. Similarly, it is not possible to map service-oriented management functions, which are vital because they are the future of DCIM.

PUE DRIVES CHANGE

For many years, power usage effectiveness (PUE) was used as a benchmark for data center efficiency. However, PUE optimization effects are leveling off because standalone improvements at the physical level have reached their limits. A silo can be optimized with a better UPS, but that will have no impact on the company’s overall result if there is waste in another layer and the full potential cannot be utilized.

If only the physical aspects of individual sites are considered, there is no scope left for major savings at enterprise level. And PUE is irrelevant in a colocation or cloud context. It’s not surprising that the PUE hype has died down and new demands have taken its place. The buzzwords now are decarbonization and carbon footprint. Who knows what will come after that? Whatever the next big thing is, only a future-proof DCIM can efficiently support new standards.





Interview: Another DCIM island cannot be the answer in today's world

Oliver Lindner is Head of Business Line DCIM at FNT Software and is a data center optimization evangelist. He has more than 20 years' experience in setting up, managing, and optimizing data centers in Europe, Asia, and the US.

Question: Mr. Lindner, not all DCIM tools are equal – why is it important to take a nuanced view?

» **Oliver Lindner:** All the various tools have different roots, they were designed to solve different problems. One type, for example, monitors facility devices in the data center, i.e., the air conditioning system and power supply. These tools take a bottom-up approach; they cannot be used to manage IT services. Other tools have their origins in IT management, their focus is top-down and is geared to the value-add services provided by a data center, i.e., applications and services. The differences between tool types are not bad, you just need to be clear about your requirements. Unfortunately, analysts have lumped the two approaches together, which doesn't help. DCIM should always be regarded as a separate layer above the fieldbus, with a clearer distinction being made.

Question: Why is the top-down approach more important in your view?

» **Lindner:** There are many reasons. First of all, from a corporate viewpoint there's more long-term value in concentrating on IT, especially if you're keen to drive digital transformation. Modern DCIM tools can do the job even if the Data Center doesn't belong to you or you use colocation. You can abstract and merge your IT management activities across locations. What do you actually need to know about a physical data center? The date for scheduled replacement of the air filters is not a strategically relevant metric for the IT process. Our vision is to deploy an enterprise-wide DCIM tool alongside an effective building control system.

Question: Why is a lean tool for asset management or a homegrown solution not sufficient?

» **Lindner:** Using a lean asset management tool to run a huge investment like a data center is a pretty far-out idea. An app isn't suitable for managing investments that run into the billions. There's a mismatch between the business criticality and the chosen solution. With homegrown tools, the risk is a tendency to gravitate toward customization. In other words, making various adaptations that trigger significant downstream costs. You end up departing from the standard and doing your own thing, without taking best practices into account. The favored approach today is a universal one: the fewer tools the better. As more teams use the same tool, the deployment costs fall and collaboration improves.





Question: What characterizes a future-proof DCIM solution?

» **Lindner:** It must be able to map standard aspects out of the box but also offer the freedom to adapt attributes or workflows and develop bespoke reports – without being completely made to measure. And it goes without saying that the ability to integrate into the existing system architecture is important, especially upward integration with higher-value IT management applications. These in turn benefit from the data set and fast response times that a modern CMDB-based DCIM system brings to the party. If the vendor provides the interfaces, it can be integrated well, easily, securely, and reliably.


Question: What else should the manufacturer provide?

» **Lindner:** They should ensure active product maintenance, reflect the state of the art, and add emerging technologies. That's easily said, but it involves consid-

erable effort. A new user interface every few years isn't enough. Development moves much faster in IT than in facility management. Furthermore, a future-proof DCIM system should be vendor-neutral and come with comprehensive libraries. This enables a business to deal with unforeseen situations such as growth, spin-offs, mergers, and consolidation. You thus need a tool that can handle typical business events of this kind. Establishing another DCIM island cannot be the answer in today's world.

Question: What should companies always consider when choosing a DCIM tool?

» **Lindner:** Even if the tender is initially just for one location, it's important to think further ahead. Where will the company be in five years' time, what features will it need then? If decisions are based solely on the individual project, you're likely to eventually hit a wall. A future-proof DCIM tool can meet tomorrow's requirements as well as today's.



What should a future-proof DCIM tool offer?

1. Flexible processes
2. Standard formats
3. Simple system configuration
4. Consistent planning functions
5. Predefined auto-discovery interfaces
6. Documentation of the application layer
7. Vendor independence

1. FLEXIBLE PROCESSES

Software with an efficient workflow engine can reduce manual effort by up to 60 percent. Predefined task modules provide the necessary flexibility to adapt processes, and graphical modeling enables further improvement of workflows. All without the need for any programming.

2. STANDARD FORMATS

Data integration is much easier if import templates are available, coupled with a comprehensive API that contains all the relevant function calls and many other standard interfaces, including Active Directory, vCenter, and SCCM.

3. SIMPLE SYSTEM CONFIGURATION

The advantage of standard software is that it comes with a host of configuration options. From management of symbols and core data through to data encyclopedias, the central administration function provides all the options necessary to adapt the system to specific requirements.

4. CONSISTENT PLANNING FUNCTIONS

Consistency is the key to optimization, especially when it comes to planning changes. It allows smooth, precise change processes and enables management of installation and change activities. Automatically generated work orders based on planning data support collaboration with external service providers.

5. PREDEFINED AUTO-DISCOVERY INTERFACES

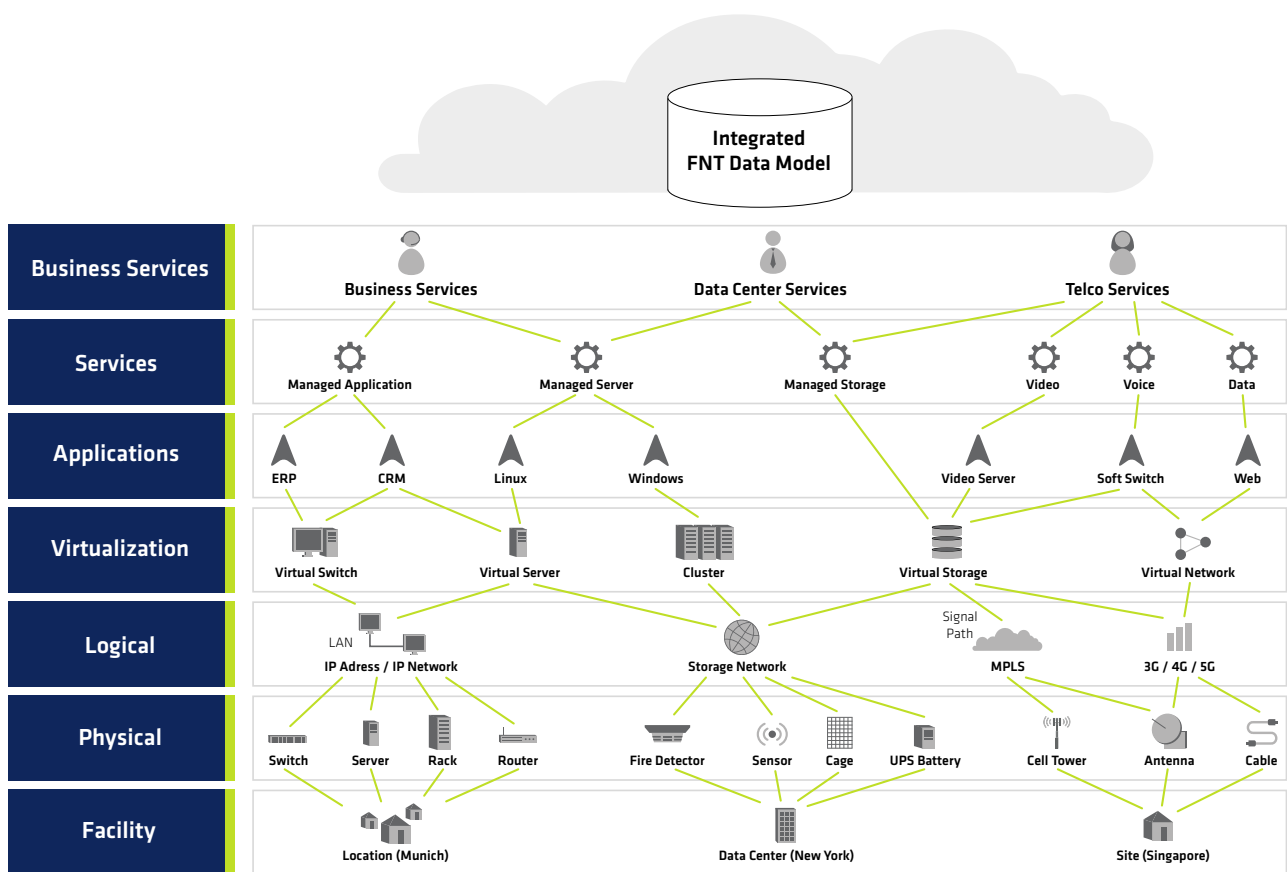
By automating the otherwise laborious documentation of active network components, you are better able to plan for the future – and achieve better results – on the basis of reliable information on your IT infrastructure.

6. DOCUMENTATION OF THE APPLICATION LAYER

A modern DCIM tool needs to cover all layers of the IT and telecoms stack, from physical and logical through to virtualization and applications. Just managing space, power, and cooling is no longer an option. Only software based on an integrated data model can capture all the information from server and host to operating system and applications.

7. VENDOR INDEPENDENCE

Many hardware manufacturers offer DCIM systems to complement their products. The downside of using these systems is that they are specialized for a single vendor. A software tool is used for a minimum of 15 years, ideally longer. Most IT devices, however, have a lifespan of less than five years. It is absolutely key that DCIM software is vendor-independent. Since the data center keeps the entire business running, it needs to be managed via a future-proof DCIM system that supports all IT vendors.



Transparency across all levels: the FNT data model

FNT COMMAND PLATFORM - HIGHLIGHTS AT A GLANCE

- **Documentation, planning, and management of IT, data center, and network infrastructure** combined in a single tool
- **A central data model** to map all physical assets, virtual components, applications, and services – including all physical/logical connections and dependencies
- **100% transparency** – from physical equipment to services
- **Comprehensive component library** of over 70,000 components from many different vendors in a realistic depiction, together with all their technical parameters
- **Interface functionalities** for automated data exchange with third party systems and simple data import from any other system
- **Integrated process management** for efficient management and monitoring of planned changes to the infrastructure – including sending work orders to service providers
- **Comprehensive options for data visualization and analysis** allow faster, knowledge-based decisions
- **Cloud-ready** – can be deployed in the public cloud, private cloud, or hybrid cloud
- **Available as a SaaS model** for maximum flexibility in terms of timescale and costs
- **Web-based application with a modern user interface based on HTML5 technology** for the best possible user experience



About FNT

FNT GmbH, headquartered in Ellwangen (Jagst), Germany, simplifies the management of highly complex digital infrastructures in companies and public authorities with its FNT Command Platform. With the cloud-enabled “software made in Germany”, IT, telecommunications and data center infrastructures can be efficiently recorded as digital twins and documented across all levels from buildings to digital services. The software also offers open interfaces and numerous functions for planning,

implementing and automating transformations and changes in an integrated manner. FNT’s customers include more than 500 companies and government agencies worldwide, including more than half of the DAX-40 listed corporations. FNT operates offices in several locations in Germany as well as in New York, London, Singapore and Timisoara and has an international partner system with market-leading IT service providers and system integrators.

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