White Paper
eco Datacenter Expert Group

DCIM ≠ DCIM

Data Center Infrastructure Management

Market Overview and Orientation Guide

Monika Graß

May 2014

http://www.eco.de
http://international.eco.de
http://datacenter.eco.de

Association of the German Internet Industry

WE ARE SHAPING THE INTERNET.

eco

MEASURE THE BENEFITS FOR DCIM

THAT'S THE CRITICAL DIFFERENCE.

The Emerson DCIM Solution provides measurable improvements that can lead to a 100% ROI in three years. *

Forrester Consulting examined the total economic impact and potential return on investment (ROI) enterprises may realize by deploying Emerson's DCIM Solution and found a risk-adjusted ROI of 100% over three years due to improved system availability, capacity planning, energy savings and productivity for remote management.

Download your copy of "The Total Economic Impact of the Emerson DCIM Solution" at:
http://go.emersonnetworkpower.com/tei

DCIM.EmersonNetworkPower.eu

EMERSON
Network Power

*Based on a study conducted by Forrester Research on behalf of Emerson Network Power.

EMERSON. CONSIDER IT SOLVED.

Content

Foreword Dr. Béla Waldhauser 4

Foreword Martin Wimmer 5

The Idea 6
- The Procedure 6
- Acknowledgements 7
- Notice 7
- Point of Departure 8
- Definitions 8
- Our Analyses 9

Monika Graß interviews ... 12
- Jesko Jacobs and Marcus Bärenfänger from arvato Systems 13
- Sascha E. Pollok, IPHH Internet Port Hamburg GmbH 16
- Florian Sippel, noris network AG 18
- Dr. Ulrich Werling, University of Regensburg 20
- Jeffrey Klaus, Data Center Solutions at Intel Corporation 22
- Steve Beber, Trackit Solutions 23
- Roland Galler, yandree GmbH 26

Product Information 28
Preliminary Remark 28

Suppliers 30
- ABB 30
- AixpertSoft GmbH 32
- AT+C EDV GmbH 34
- CA Technologies 35
- COFELY Deutschland GmbH 36
- Cormant, Inc. 37
- DataCenterVision S.A. 38
- Emerson Network Power 39
- FieldView Solutions 41
- FNT GmbH 42
- IMS GmbH 44
- iTRACS, a CommScope Company 45
- OSL Gesellschaft für offene Systemlösungen mbH 47
- Panduit 48
- Rackwise Inc. 50
- Raritan Deutschland GmbH 52
- Schneider Electric GmbH 53
- speedikon Facility Management AG 54
- TKM – Telekommunikation und Elektronik GmbH 56
- tripunkt GmbH 58

Product Features 60

Module Overview 64

Module Details (Part 1) 70

Module Details (Part 2) 80

Interaction with Partners 88

Technical Details (Part 1) 90

Technical Details (Part 2) 100

Pricing Information 109

Advertisement from the Partners 110

About the Author 120

About the eco Association 121

Foreword
Dr. Béla Waldhauser

Dear DC-Insiders and interested Readers,

Planning a data center is without question a challenge. So is building it. However, for me, the biggest challenge is to operate a data center with as little downtime as possible and as efficiently as possible over many years. To balance, time and again, the requirements of ICT, a cost-efficient operation, and the best possible availability. And all this in the context of the continually changing internal and external parameters of the varying stakeholders. Achieving all of this is only possible with access to as much information as possible about the data center, and this information always needs to be up-to-date. Insiders are aware of the fact that it is not simply about the power and climate control infrastructure (Facility) in the data center; it is above all about the coordination between the IT and Facility infrastructure. Every DC operator knows the eternal struggle to maintain equal capacity on all three phases of power.
This is only one of many examples.

Achieving this is only possible with DCIM, but which solution is the right one for my company, for my data center? This White Paper is designed to provide practical assistance in making that choice, and will undoubtedly find a large readership.

Happy reading!

Dr. Béla Waldhauser
CEO Telehouse Deutschland GmbH

Foreword
Martin Wimmer

Dear Readers,

I am almost tempted to begin this preface to a White Paper on DCIM solutions in the style of a classic fairy tale.

Once upon a time... a department head in my institution set out to replace a solution for the documentation of our infrastructure – an in-house solution written back in the mists of time, at the very beginnings of IT – with a commercial solution. In order to screen the market effectively, he – Dr. Ulrich Werling – created a catalogue of criteria, together with his colleagues, which described what the future solution should be capable of. With every discussion, the wish list grew longer.

For a university data center, there is the additional challenge of administering not only the infrastructure in the actual data center, but also the entire passive and active network technology distributed across the campus.

After a variety of product presentations and tests, a certain frustration began to surface in us, as none of the offered solutions were truly convincing in all aspects. So we ended up back at the drawing board again. Which requirements were absolutely essential, and which requirements would be better realized in other systems?

As a result, I was very happy when Ms. Monika Grass rang me one day and asked me, among other things, if I knew anyone who would be interested in grappling scientifically with the topic DCIM. A professorial chair which counts DCIM to its research areas was not to be found, but in the ensuing discussions it quickly became clear that we were not the only ones who were looking for an appropriate solution. The, from my perspective, very successful result of this exchange of knowledge and experience is now in front of you.

We have benefitted greatly from the resulting exchange, and we hope that our groundwork can help those responsible for other data centers.

Martin Wimmer
Manager of the Data Center
of the University of Regensburg
Chairman of ZKI e.V.

The Idea

Can bridges be built with DCIM (Datacenter Infrastructure Management)?

In February 2013 at the ecoTrialog #4[1] 10 companies demonstrated that a bridge can be built between facilities and IT using DCIM. However, it was very clear that the functionality of the providers' solutions were very differently interpreted and implemented.

Research into DCIM solutions turned out to be quite protracted. As a result the idea developed of compiling a market overview which gives you the possibility of making a preselection and making contact with providers on a more selective basis.

We plan to update this Market Overview and Orientation Guide in the future. Monika Graß looks forward to your suggestions, input and future involvement[2].

The Procedure

We wrote to, spoke to, and used a variety of media to get in contact with more than 60 companies world-wide, and asked whether they offered a DCIM solution, and whether they were interested in actively participating in this Market Overview.

All participating companies were then asked to complete a questionnaire we had developed, including the following:

- General information
- Product features
- Co-operation with partners
- Technical data
- Price information.

The answers are the basis of this White Paper.

Additionally, we undertook interviews with several companies that have already implemented a DCIM solution, in order to allow you to benefit from their experience. We found solutions which were developed or complemented using Open Source products, particularly at the Internet Service providers. In order for this aspect also to be taken into account, we raised it in the interviews.

- DCIM at arvato Systems GmbH – the Implementation Project
- DCIM at IPHH Internet Port Hamburg GmbH – an Open Source Solution
- DCIM at noris network AG – a Symbiosis of Proprietary, Open Source and Individual Software
- The Choice of a DCIM Solution at the University of Regensburg

[1] http://datacenter.eco.de/2013/news/ecotrialog-4-neue-ideen-fuers-infrastructure-management.html

[2] http://datacenter.eco.de/kontakt.html

The best software solution is of little help if the data base is not correct or up to date. The "Data Washing Machine" was developed by yandree on the basis of many years of experience in DCIM implementation. Trackit Solutions' focus is also on the data base: They bring the term "Datacenter Asset Management" (DCAM) into play. The Intel® Datacenter Manager is integrated into the solutions from a range of providers. Interviews with representatives of these three companies are also found in this White Paper.

Last but not least, Mr. Martin Wimmer, Manager of the University of Regensburg data centers, has accompanied and supported us through this project.

Acknowledgements

We wish to thank all of our interview partners and the participating companies for supporting this White Paper through their input. We look forward to further co-operation in the future.

A special thank you goes to companies who are supporting our White Paper financially with the placement of advertisements. Dear readers, you will also find further information in these advertisements!

Judith Ellis, eco e.V., has made a significant contribution to the English edition. Thank you very much for your translations, especially seeing as many were done under time-pressure.

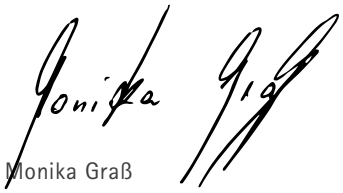
Mr. Martin Wimmer, Dr. Béla Waldhauser – it is always a pleasure to work with you both.

Notice

This Market Overview is not conclusive or exhaustive, but is based on the input made available by the companies. Please note the compilation date of May 2014.

In the event that we interpret information, make analyses or take a position, we indicate this. All other content is based on the information from the providers and interview partners, and no responsibility is taken for the correctness of this information. We have sorted the product information alphabetically according to the company name. This is also the case – with the exception of two companies who took advantage of our special offer – for the advertisements.

We hope that this White Paper provides you with some support, and we look forward to meeting you at future eco Datacenter Expert Group events[3].



Monika Graß
eco Datacenter Expert Group

3 http://datacenter.eco.de/events.html

Point of Departure

According to the analysts from The 451 Group, there are currently more than 55 providers of DCIM tools. By the year 2016, revenues in this market segment are forecast to grow by 44 percent on average, to around 1.8 billion dollars.

DCIM is a prevailing topic world-wide; for analysts, for suppliers of products/services, and increasingly also for data center operators.

The functionality and the requirements for DCIM are not standardized; speak to three people, and you will get at least three different descriptions, generally depending on the scope of work and the perspective of your conversation partner.

DCIM is not new; what is new is the approach that the individual departments associated with the data center can jointly examine their information and as a result optimize their performance (software, hardware, telephony, infrastructure, administration). Integration is one of the most important tasks, as hardly any data center operators begin as a start-up: much more likely is that tools are already implemented in many areas which provide a portion of the information required.

Definitions

There is no single, unified definition of DCIM. Following are several independent definitions:

- **Gartner**
  Data center infrastructure management (DCIM) tools monitor, measure, manage and/or control data center utilization and energy consumption of all IT-related equipment (such as servers, storage and network switches) and facility infrastructure components (such as power distribution units [PDUs] and computer room air conditioners [CRACs]).

- **451 Research**
  A DCIM system collects and manages information about a facility's assets, resource use and operational status. This information is then distributed, integrated, analysed and applied in ways that help managers meet business and service-oriented goals and optimise a data center's performance.

- **Forrester Research**
  Data center infrastructure management (DCIM) is a comprehensive approach to managing the physical aspects of the data center. DCIM is the convergence of previous generations of purely facilities-oriented power management, physical asset management, network management, and financial management and planning solutions for data centers. If used properly, DCIM solutions can help I&O professionals address steadily ratcheting pressures to meet business SLAs, lower costs, and improve resource and energy efficiency and long-term facilities planning.

- **Searchdatacenter**
  Data center infrastructure management (DCIM) is the convergence of IT and building facilities functions within an organization. The goal of a DCIM initiative is to provide administrators with a holistic view of a data center's performance so that energy, equipment and floor space are used as efficiently as possible.

- **Wikipedia**
  Data center infrastructure management, the marriage of information technology and data center facility management disciplines

And finally, our classification:

DCIM can be the Enterprise Resource Planning (ERP) System with which business tasks are implemented in the existing company ICT resources as efficiently as possible for operational processes, in order to optimize the control of business processes in the ICT environment. It should include interfaces to the company's ERP Systems.

Our Analyses

The answers from the companies are provided in the next section; please use these for detailed information.

Product Information

Point of departure for this analysis was a complete overview of the ICT:

Critical Infrastructure Assets/Resources	Layer
Applications	Application Layer
ICT (like servers, storage, networks, switches, telephony, virtual machines, etc.)	ICT Layer
Passive part of DC (like location, space, power, cooling, etc.)	Facility Layer

- The majority of providers support assets/resources in the facility and ICT layers. To what extent applications have already been incorporated is not yet clear. Some providers point out that the customer has the possibility to expand the pre-defined assets/resources.
- Here it is again the case that there is no unified terminology for the assets/resources.
- Several providers are focused on a sub-domain of data centers.
- As a rule, libraries of equipment from well-known producers are offered. Not all providers allow the customer to expand the library.
- For the importation of assets/resources diverse methods are generally supported, including barcode, RFID, auto discovery, manual data entry, import, etc..
  As can be seen in the interviews with Trackit Solution and yandree, there are providers whose solutions are specifically tailored for this task.
- For the inventarization, the same methods are available as for the importation. Providers are increasingly developing solutions to enable the use of mobile devices.
- Every provider has their own definition for the modules; as a result, a direct comparison is not possible.

Product Features (no definition given)	Provider (=Yes)	Product Features (no definition given)	Provider (=Yes)
Asset Management	90%	Business Intelligence	75%
Connectivity Management	90%	■ own integrated BI solution	50%
Resource Management	80%	■ 3rd party BI solution can be embedded	70%
Power Management	85%	Administration of Investment in Equipment	60%
Inventory Management with Contract and License Management	70%	Dashboard, Report and Print Management	85%
Planning Management	85%	■ own integrated solution	85%
Task Management	75%	■ 3rd party tool can be embedded	80%
Change Management	85%	Further	60%
Workflow Management	80%		
■ own integrated workflow engine	65%		
■ 3rd party workflow engine can be embedded	60%		

- Some providers do not support the integration of Workflow, Business Intelligence and Report tools, which means that tools already implemented in the company can not be used for the DCIM. This should be taken into account particularly in the examination of resources and costs.

Cooperation with Partners

In general, it is still a long road until DCIM architecture can be developed in such a way that there are in-house and third party apps, and customers will be able to choose the appropriate solution for their needs in the DCIM store.

The first providers are beginning to offer their solutions as a core platform, and actively recommend the integration of external partner solutions.

Technical Data

- The system architectures vary. The majority of products offer a Web browser as user interface.
- Microsoft SQL and Oracle are the most commonly offered data bases. A few providers use a proprietary solution, and some providers support a range of data base systems.
- Not all providers disclose the structure of the data bases.
- Every project supports the English language; some solutions are available in multiple languages, or this development is planned.
- In general, connectors to external providers are offered. Extensions are supported to a varying extent.

Price Information

The price models of the providers vary considerably. When examining the costs, we recommend that, in addition to the licensing and maintenance costs, the following aspects should also be considered:

- The costs for external customizing and consultations.
- The internal costs during the implementation phase.
- The costs for updating and migrating data.
- The internal costs for DCIM data maintenance, including possible costs for necessary system software.
- The costs for the training of staff.

Furthermore, we recommend checking whether existing solutions will become obsolete.

Interviews with the Providers of Solutions

During the research for this White Paper we came across several companies whose apps effectively support the DCIM solutions on offer. The three companies with which we were able to hold interviews represent a small selection of the possibilities. There are further interesting solutions available.

It is striking that these apps have often been developed by former employees of the DCIM providers, who, through their consultation work, identified deficiencies in the functionalities.

Interviews with Data Center Operators

The Implementation Project	An Open Source Solution
The biggest challenge: Integration of DCIM into daily business.	The monitoring of all services, systems and the technical infrastructure of the data center is done using Nagios.
The highlight: Unit calculation and invoicing for individual departments using an SAP interface.	Diverse in-house Plugins and also embedded systems.
Targets were exceeded. Using DCIM there are possibilities that have never before been seen.	So far a DCIM Tool has not been found on the market which offers the required flexibility.
Exemplary cooperation with provider.	Software development skills are necessary.
A Symbiosis of Proprietary, Open Source and Individual Software	**The Selection Process**
DCIM in use since 2000.	Main interest is the documentation of the complete data center network infrastructure.
Tools for IT operation are also used in the data center operation.	Trials over several weeks.
DCIM results are made available to customers online.	Firstly, a set of specifications 13 DIN A4 pages long; tendering documentation to follow.
The DCIM solution is also – to a limited extent – used for rented Colocation spaces.	Trials of 4 products; each 3 months long, with max. 5% of working time.

We recommend taking advantage of the experience of these companies in planning the next steps; all of the companies have agreed to being contacted in order to share their experience.

Our Assessment and Recommendation

DCIM will be an important challenge in the ICT environment in the coming years.

We anticipate that the existing solutions will rapidly be further developed and that the individual providers will refine their focus. We have been studying DCIM for more than a year now, and as such have been able to observe the products in several versions.

The providers of pure energy management systems did not see themselves as DCIM providers, and as a result we have not included these tools in this White Paper. Despite this, when considering a DCIM ERP, they are in our opinion an important component, and are integrated into several of the solutions presented here.

From our perspective, there will be no alternative to the philosophy of a core platform and apps.

Every company needs to define for itself what tasks it wishes to use DCIM to solve, and for which of these tasks real-time information is required. As a result of the complexity of the functionalities, we recommend a modular implementation. As almost no companies start from scratch with DCIM, the starting point needs to be a careful analysis and thorough planning of which existing solutions should be integrated.

Data migration is often undervalued as a component in IT projects. This task should also be given considerable emphasis for DCIM. Data from multiple areas needs to be merged, and it is often established that there is no unified definition of assets/resources.

We recommend that companies make use of the synergies and experience gained during the introduction of IT applications. DCIM is "simply" another application, although admittedly a cross-sectoral and potentially very complex one.

DCIM requires personnel, not only during the implementation.

DCIM can support the ICT for management, can increase planning security, can improve the physical security of ICT and of course can enhance effectiveness and efficiency. Further objectives can be defined individually.

Our Conclusion:

DCIM ≠ DCIM

Both for the providers of solutions and for the potential customers!

Picture: © Kay Winter - WINTERPOL GbR - Hamburg

Jesko Jacobs and Marcus Bärenfänger from arvato Systems

Jesko Jacobs, Senior Manager Data Center

Career history
With Bertelsmann/arvato Systems GmbH
in various positions since 1992
Education
Msc in computer science, TU Dresden
MBA, Henley Business School

Marcus Bärenfänger, Project Manager, Data Center Technology, Energy Efficiency Manager

Career history
With Bertelsmann/arvato Systems GmbH since 2000
Education
Msc in electrical engineering/energy engineering
Energy efficiency manager (TÜV); ITIL® V3; BICSI® DC Design; PM cert.

Mr. Jacobs, was there a specific event that led you to become involved with DCIM at arvato Systems?

The main objective behind the rollout of DCIM (Data Center Infrastructure Management) was to further improve the management of existing resources in our data center. Space utilization, electricity, and air conditioning were the key considerations. But we also wanted to address hardware support issues in the data center in order to improve our ongoing upgrading of internal processes, and this led us to become more deeply involved in DCIM.

What were the objectives you pursued with this project?

The aim of introducing DCIM was to provide better, more effective support for all 'assets' in the data center, i.e., all hardware components such as servers, storage, network components, etc. We would also like to continue our efforts to more effectively monitor and continuously improve processes in the data center within the possibilities available. One of our visions in this regard was to create a complete inventory of a data center within one day. Previously, it took us several weeks to make an inventory of the thousands of components in a data center. Now with the help of DCIM, this has been reduced to a single day thanks to detailed scheduling. The introduction of DCIM also allowed us to create new process chains. Another goal was to provide the specialist departments with optimized, comprehensive support for hardware lifecycle management.

You initiated the rollout as a project. Which departments at your company were involved?

In addition to colleagues from the data center, other key units, such as servers, storage, virtualization, and network, were involved in the project, as was our department responsible for internal processes.

Mr. Bärenfänger, you served as project manager. How long did it take you to complete the project? Were you able to finish on time?

The project was planned for the period of early 2012 to late June 2012. Within this project, we focused on finding a technically feasible solution rather than adhering to a strict deadline for completing the project. We were able to achieve our goal of launching in July 2012.

Roughly how many employees were working on this project full-time?

Two employees were working on the project and are still involved with it on a daily basis.

Which tasks were performed within the project (e.g., tender documents, tool selection, etc.)?

- Internal department project management (start to finish)
- Market analysis
- Invitation to tender
- Presentation in live demonstrations
- On-site visits to reference customers
- Tool selection
- Installation
- Employee training for subsequent day-to-day operations

- Interfaces to tools and applications in specialist departments
- Information management for specialist departments
- Cost analysis
- Resource analysis
- Integration of company-specific electronic workflows
- Transition from project into day-to-day operations

Please describe the steps following tool selection.

We began preliminary services as soon as the project got underway. A dedicated virtual Windows server with a Microsoft SQL database, which was initially empty, was set up for the application. We also provided the manufacturer with data center/floor plans and Excel lists containing rack and asset data. For the actual installation of the system two months later on our premises, the processed data was migrated to the system right after system licensing. The first data set was completed. Online access is available, with login via user name/password. We focused on the required fine-tuning in the weeks that followed. We developed custom input screens for arvato Systems, made layout changes, and carried out additional data synchronizations together with the manufacturer. At this point, the application support switched over from traditional project work with a project manager to support for day-to-day operations. At the same time, we set up an internal network in order to synchronize a CMDB (Configuration Managed Database) via an interface and also to assign role-based permissions for individual employees from specialist departments for read access rights, participation in end user/customer Web sessions, and internal and external training seminars.

Here is an overview of other sub-tasks within the scope of the project:

- Introduction of a standard labeling system
- Data center, room, rack, and asset inventory
- Rack management
- Invoice management
- QR code labeling following the 'TÜV principle' – multicolor labeling changing on an annual basis
- Cable management

What was the biggest challenge in this project?

The biggest challenge in this project was during the translation from initial setup (including inventory) to day-to-day operations. As with any documentation, the most time-consuming tasks are maintenance and updates as part of documentation management. If you are not on the ball at all times, you quickly run the risk importing out-of-date information into the production environment.

What were the highlights of this project?

The absolute highlights were the initial system containing the first production data with rack unit invoicing and the shared racks via the SAP interface to the department management teams.

Are there any special tips that you can give to companies currently considering whether to introduce DCIM?

Companies currently considering whether to rollout a DCIM system should definitely make allowances to ensure sufficient staff resources are available for the project. The project data require meticulous maintenance, meaning it is very important that staff be carefully selected. It is crucial that data be meticulously managed, since even the slightest transposition of numbers can have serious repercussions. As in any project, it is absolutely necessary for the relevant departments to be involved early on in the project. Fixed inventory cycles should be established right from the beginning so that they don't quickly end up working with outdated data sets.

Finally, how big is your data center?
How many assets are involved?

Our biggest data center is around 5,000 square meters. A total of more than 9,500 physical assets are involved, not including cables.

Mr. Jacobs, were the planned goals achieved through the introduction of DCIM?

Absolutely, we even exceeded them! The central storage of all information and the speed at which it is collected gave rise to new possibilities in terms of internal processes. Before the project began, we were unaware of the scope of this effect, which far exceeded our expectations. For example, we are now able to transfer our electronic workflows with far more precise information to our power supplier after the rollout of DCIM.

How do you use DCIM as a manager?

In my view, DCIM is primarily a reporting tool that allows informative overviews and statistics to be generated quickly. The main benefit lies in the everyday use of the system by employees in the data center.

How do you ensure that DCIM continues to grow and evolve after the project is over?

We have already firmly integrated DCIM into our everyday data center processes. We are also continuously upgrading the system and conducting monthly inventories to keep the information up to date. I would like to point out that collaboration with the manufacturer as a trusted partner was exemplary.

Have you planned any further DCIM expansion phases?

Cabling is very important to us. We could improve the current situation in this area.

Can companies contact you to share ideas?

We would be very happy to share ideas and can be contacted by e-mail at info@arvato-systems.de.

About arvato Systems

arvato SYSTEMS

As a systems integrator, arvato Systems implements tailored, industry-specific, and custom-developed solutions in addition to the implementation of standard software. Over 2,500 dedicated employees work at the company's 25 sites throughout the world, always close to the customer. Together with arvato, a leading global BPO provider and part of the Bertelsmann Group, we are able to offer services across the entire value-added chain. Our solutions map business processes in the IT system and allow us, in combination with the services offered by arvato, to deliver a full-service package from one source. The strength of the company lies in its ability to provide a well-designed service package that includes systems integration, planning, development, hosting, and system support. Our customers appreciate the combination of extensive industry expertise, technological knowledge spanning all manufacturers, genuine partnership, and true entrepreneurial spirit. We help pave the way for your business success with our range of products and services.

www.arvato-systems.de

Sascha E. Pollok, IPHH Internet Port Hamburg GmbH

Career history

Sascha Pollok has been working with computers since he was seven years old, and at 13 his home-made modem connected via telephone cables to Mailbox systems and Datex-P for the first time. A typical career-changer, he started to concentrate on Linux at the age of 19, and has worked since 1998 in the ISP world. The qualified Media Manager is today active as CTO at IPHH and is responsible for, along with all technical products, the construction and operation of the data center.

As a balance to his work, which he approaches with passion, he listens to music, likes to travel, and likes to meet a lot of different people. He also loves cooking, eating well, and writing about himself in the third person.

Mr. Pollok – who and what is IPHH Internet Port Hamburg GmbH, or IPHH for short?

IPHH is a B2B service provider that offers Managed Hosting Services, Colocation and a broad palette of other Internet services in fully owned and partly rented data centers. With a highly qualified team, individual solutions for customers are worked out, implemented, and supported over their entire life-cycle.

IPHH controls and monitors not only the data center infrastructure, the servers, the storage, and the network, but also the applications, with Nagios. Please briefly describe the further tasks that you cover.

The monitoring of all services, systems and the technical infrastructure of the data center is undertaken using the open source monitoring system Nagios. IPHH has developed diverse plugins for Nagios, which can display a wide range of components. This includes, for example, dozens of measurements from the climate control system, power consumption of server racks in the different data centers, the up-to-datedness of Linux packages on servers supported by IPHH, or the condition of network components.

Have you integrated any further tools?

IPHH carried out further developments to be able to display the monitoring and the management better. So there is an in-house package management system, which enables the checking and approval of software packages on hundreds of servers, or a tool which can regularly read the M-BUS-based networked electricity counters to determine the power consumption exactly.

Are the available components sufficient, or have you undertaken individual expansion?

In the area of monitoring, individual adaptations and developments are absolutely essential for IPHH. For example, the automatic allocation of domains in the customer data base and their delegation in the corresponding NICs are checked. For this, there is no finished product which would have met our needs.

There are now diverse DCIM tools available on the market. Are you thinking of implementing any, perhaps as a supplement to your existing solution?

We have looked at a diverse range of tools in the open source area and also commercial closed source solutions, but have often found that these are unusable for us, as a result of the flexibility of the connections to our existing system – as standalone tools, however, they are mostly impressively good. It is just that they are difficult to integrate in the complex landscape at IPHH. For example, there are many systems for administration and cabling in data centers, and yet there is often a lack of open interfaces for the integration of our existing systems.

If you had one wish – what would you wish for as an extension?

Currently in Nagios, we are in need of better integration of our ticket system in order to be able to better integrate event-related incidents, and not always to need to assign problem/recovery manually.

What skills does a company need in order to use such a system successfully?

Detailed knowledge of handling the monitoring system (here Nagios) and the interfaces, as well as of the technology which should be monitored. In addition, the necessary know-how of software development in order to develop in-house plugins. As the Nagios interface is relatively simple, almost any programming language can be used here.

Can companies contact you for the purposes of an exchange of experiences?

Gladly, to sp@iphh.net.

About IPHH:

IPHH was founded in 1996 as an Internet Service Provider for business customers. Today, IPHH specializes in Full-Service Managed Hosting environments, Colocation and networked locations, and works out solutions for a wide range of projects hand in hand with the customers. Subsequent to the planning, these are completely implemented by IPHH, are supported around the clock in our own data center, and further developed.

For the customer, IPHH is a universal partner in all questions relating to professional Internet service provision.

www.iphh.net/en

Florian Sippel, noris network AG

Career history

Florian Sippel has worked for more than 10 years on the symbiosis of IT systems and data center infrastructure at noris network. Among other things, he was leader of the internal Infrastructure and System Administration team. For the last few years he has been in charge of the fundamental re-design of the noris network data centers.

How long has DCIM – perhaps also using another name – been a topic at noris network?

Since the early 2000s, when we began to import and administer data center infrastructure assets, such as UPS systems and emergency power generators, in our IT CMDB. The system continued to develop for years.

The DCIM in your company is not a solution in the sense that it can be bought on the market. Can you briefly outline which areas you solve using standard solutions, which with open source, and which with individual software?

In my opinion, DCIM is always a solution, because the software needs to be adapted to and integrated into the processes and conditions in the respective company.

Given the history of noris network as an Internet and IT service provider, it was only natural to use the tools for the IT operation also for the data center operation. All software for the control of processes, event monitoring, monitoring, alarms, and capacity management, as well as workflow tools and the ticket systems are exclusively realized using free software.

Is the complete solution an emergency solution which grew, or a solution which you would implement with conviction in future locations?

The system will also be implemented in future locations, as the degree of integration is very high in the systems for task execution and accounting, and in the CRM system.

Nevertheless, systems will certainly appear from the industry in the future which can better depict the process "data center", with all its tasks for regulating, controlling and monitoring, than the systems that we are currently using.

What is special about your solution?

The displaying of ITIL processes for the facility management – from a processual perspective, it doesn't matter whether a hard drive in a Raid system or a battery in a UPS system fails. The mechanics are the same at an organizational level.

You mentioned that your power supplier is "envious" of some of your measurements. Which ones are they? How do you determine them?

The backbone of every DCIM solution is the recording of data at the field level. This goes from network analyzers to the checking of power supply quality of the input and output from the UPS system, BUS-capable circuit-breakers, communicative emergency power generators, through to self-monitoring, calibrating temperature sensors in the airflow to the IT components.

noris network operates their own data centers and has also rented space at Colocation providers. Can you also use the DCIM on these spaces? Are there limitations?

Yes, of course to a reduced extent, as we have no direct access to transformers, generators, UPS systems, climate control or the perimeter protection. The monitoring of the purchased services takes place with the same systems, simply further back in the value chain. That means we monitor voltage quality at our sub-distribution board and temperatures of the supply and exhaust air. Regardless of this, the asset and cable management functions analogous to those in our own data centers.

Do you make up-to-date measurements from the data center available online via the DCIM for your customers? What data is this?

Certainly, we make the relevant measurements and information available to our customers. These are in particular the load on electrical circuits, Internet uplinks and leased lines, and spatial capacity in the form of rack units or footprints.

Knowing you as well as I do, I imagine you are already planning the next expansions. Are you willing to let me in on your intentions with regard to DCIM?

Yes, gladly. We are currently implementing a standardized interface (API) for our customers, so that they can automatically retrieve the electrical power draw of individual IT components, in order to optimize the energy in their cloud applications or virtualization environment.

Can companies contact you for the purposes of an exchange of experiences?

Certainly, florian.sippel@noris.de

About noris network AG

Based in Nuremberg, noris network AG offers companies custom made ICT solutions in the areas IT outsourcing, cloud services and network & security. The technological basis of these services is a powerful IT infrastructure with a noris network-owned high-performance backbone and several high-security data centers – including the NBG 6, recognized as one of the most modern and energy-efficient data centers in Europe. Under the trademark datacenter.de, standardized premium data center products are offered, supplementing the individual solutions.

noris network AG is certified with their entire business activities according to ISO/IEC 27001 for their information security management, and for their service quality management according to ISO/IEC 20000. The noris network data centers were awarded the maximum rating of five stars by eco – Association of the German Internet Industry e. V. in the eco Datacenter Star Audit. The datacenters NBG3/4 and NBG 6 have been certified to the ISO 27001-Certification on the base of IT-Grundschutz of the BSI.

Founded in 1993, noris network AG counts as one of the German pioneers in the area of modern IT service provision, and supports renowned compaines like adidas AG, Cortal Consors S.A., Flughafen Nürnberg GmbH, the Max Bögl Group, Küchen Quelle GmbH, Puma SE, Schmetterling Reisen GmbH & Co. KG, Teambank AG, and many more.

Headquarters:
noris network AG
Thomas-Mann-Strasse 16 - 20
90471 Nuremberg, Germany
Telephone: +49 911 9352-0, Fax: +49 911 9352-100
Email: vertrieb@noris.de
Homepage: www.noris.de

Dr. Ulrich Werling, University of Regensburg

Career history

Head of the Department Data Center Infrastructure at the University of Regensburg

Responsible for:

- The operation and the further development of the data network at the University (LAN and WLAN) in both the passive and active areas
- Coordination of all necessary related building measures
- External connection of the University of Regensburg to the science network X-WiN and the Internet
- IT security
- Operation of network-related services (DHCP, DNS, RADIUS etc.)

Dr. Werling – You have been focusing for a while now on the choice of a DCIM solution for the University of Regensburg. Which path have you taken?

Searching for providers in the WWW and through introductions at conferences (e.g. the LanLine meetings), Reviewing the available documentation, if the product is interesting for us: Request of a trial lasting several weeks, evaluation of the trail according to our set of specifications, comparison of the individual products (on suitability and cost)

Do you want to start from scratch with the DCIM solution, or do you want to integrate existing solutions?

The main interest for me is the documentation of the complete data network at the university, incl. our data center and the existing power cabling there; so far, there has only been software developed in-house, which contains the data outlets installed on the campus. Line tracing (e.g. which data port in which room is connected to which switch port) is not supported. The system is also 10 years old, and doesn't run on modern operating systems. As a result, this system is not integratable. However, the existing data set should be taken over into the new system. But apart from that, we are basically starting from scratch.

What has been the greatest challenge so far, or do you have requirements that you have so far been unable to cover with the existing solutions on the market?

One of the main problems are our modular cabling systems (AMP ACO System or LEONI MegaLine® Connect 100) that are to be mapped. In particular, cable sharing, meaning two terminals over one cable, or the use of 4K7 connectors which are connected over an 8-wire cable, but using four 2-wire connections, two 4-wire connections and one 8-wire connection or also allowing mixtures, are difficult to map.

How comprehensive are you tender documents?

A tendering process has not yet been undertaken.
Our set of specifications, which contains our preliminary wishes, is 13 DIN A4 pages long.

You work with trials. How would you assess the practical experience with regard to fulfilling your specifications?

The evaluation of the trials can of course only occur along the way. We test with regard to our specifications. All systems tested by us are by nature not efficient to use without a deeper understanding of the respective product. This includes a clarification of the data model, the concept of the contained CMDB, the fundamental philosophy of use, and so on. These need to be provided for a meaningful test.

How much time should a company schedule for the process of choosing?

That depends on the percentage of working time one or more workers will spend on it. So far we have tested 4 products (FNT, Tripunkt, AT+C and AixpertSoft) and it has taken at least 3 months for each, but we were only able to dedicate max. 5 % of our working time to the process.

Can companies contact you for the purposes of an exchange of experiences?

Of course.
Email: ulrich.werling@rz.uni-regensburg.de

Universität Regensburg

More about the University of Regensburg
www.uni-regensburg.de

Jeffrey Klaus, Data Center Solutions at Intel Corporation

About his Occupation

Jeff Klaus (GM) leads a global team that builds and markets software solutions for Data Centers. His product portfolio which includes Intel Data Center Manager (DCM), vKVM Gateway and additional Data Center products in development. Jeff is responsible
for the global engineering, marketing and sales organizations.

Mr. Klaus – please describe the Intel DCIM-Tool in a few sentences.

Intel Data Center Manager (DCM) Energy Director optimizes energy efficiency and thermal management. Provided as an SDK plug-in or as a complete console solution, Energy Director exposes real-time power and thermal data at the device level, it easily integrates with DCIM Management consoles or the Intel branded console can be used by the operator directly. The software provides insight on energy use trends and greater control over power use with intelligent group policy directives. Intel DCM is agentless and easily integrates and can reside on an independent server or co-exist with ISV products on the same server. It can manage tens of thousands of servers while providing secured APIs, communication with managed nodes and encryption of all sensitive data.

Is the Intel solution available on the market as a stand-alone solution, or is it integrated by solution providers?

Both. Intel DCM Energy Director is available as a plug-in SDK and is already integrated into many of the top DCIM solutions globally, with over 50 license relationships. Users can visit www.datacentermanager.intel.com for specific details or for access to the Intel branded console for a 90 day trial.

What are the advantages of the Intel solution?

There are many use cases for the DCM Energy Director solution. Planning power capacity, VM migration, reducing IT capital costs, raising DC temperatures, and power capping. The list goes on. Energy costs are the fastest-rising cost element in the data center. Power consumption is one of major concerns of these facilities, clouds and large IT Enterprises. Intel DCM provides accurate, real time power and thermal monitoring and management for individual servers, group of servers, racks and IT equipment such as PDUs in the data centers. It is a capability that is useful for both IT and facility administrators, which allows them to work jointly to reduce the Energy footprint.

What are your development plans for the next 12 months?

Customers with an NDA can get access to our roadmap, we don't disclose it publicly.

May companies approach you with the purpose of an exchange of experience?

Trial software and technical contact information is available from www.intel.com/content/www/us/en/software/data-center-software.html

About Intel

Intel (NASDAQ: INTC) is a world leader in computing innovation. The company designs and builds the essential technologies that serve as the foundation for the world's computing devices. As a leader in corporate responsibility and sustainability, Intel also manufactures the world's first commercially available "conflict-free" microprocessors. Additional information about Intel is available at newsroom.intel.com and blogs.intel.com and about Intel's conflict-free efforts at conflictfree.intel.com.

Steve Beber, Trackit Solutions

About his Occupation

Steve launched Trackit Solutions in January 2009 after identifying a gap in the DCIM market. In his role as Managing Director he takes full responsibility for the strategic direction of business, and has set some aggressive growth targets as a result. His immediate objectives now are to identify new partners, in parallel with maintaining key customer relationships.

With an already impressive career history behind him, Steve brings extensive knowledge of the data center industry to his current role. Before launching Trackit Solutions he held a number of senior management positions; most recently as VP of Professional Services for EMEA at Emerson Network Power (Aperture). In this role he was focused on developing new opportunities, monitoring trends and managing an extensive EMEA-based team whose roles were to conduct professional services for implementing the DCIM solutions. Prior to this Steve headed up several companies including a London based IT Consultancy focusing on data center build/design and a logistics company that carried out Data centre moves and consolidation programs/server migration projects.

Steve, the staff of Trackit Solutions have broad knowledge and experience in the implementation of DCIM solutions in the market for large and small business around the world, what are the challenges involved in a DCIM implementation?

There are many challenges found when implementing DCIM solutions, some more complex than others and differ from customer to customer. In the main the areas that seem to cause the most challenging are:

- Existing data – Many companies believe they have accurate data around the physical devices within their data centers but in most cases this is either not challenged or validated as to how complete and accurate this actually is. Inaccurate data will lead to poor data being imported into a DCIM solution then leading to inaccurate reporting and lack of confidence in the product.
- Understanding of resource requirements – Many business fail to understand the level of resources both financial and labour resources for both initial implementation and on-going upkeep of any solution that are required. Underestimating this puts added strain on operations teams and seldom leads to tools being dropped and becoming shelf ware.
- Adoption – Ensuring adoption is always tricky as many people don't like change and don't like to feel like a system is being introduced that can at first be a more time consuming method of working

What is the reason that "Trackit Solutions" positions yourself as Data centre asset management (DCAM) opposed to DCIM and what are the differences?

From our opinion over the past few years the term "DCIM" has been used too easily without real definition and clarity of what DCIM is. Today it is thought there is over 70+ DCIM tools on the market but the reality is potentially only one or two of these are actually a fully-fledged DCIM solution, many of the others just make up a small piece of what DCIM really is. Because of this there is much confusion as to what DCIM is and what value it gives, this is certainly a confused market space and many vendors are doing nothing to add clarity but instead add to the confusion by saying they have a DCIM solution. At Trackit we understand that our offering is the foundation of what is required to implement a full DCIM solution. Data Centre Asset management provides a view of the physical devices contained within the data center space including mechanical and electrical equipment, this combined with a powerful reporting engine gives over 80% of what DCIM should provide but without the intelligence of embedded monitoring or alerting solutions. The monitoring and alerting tools that many companies already have in place like CMDB, BMS and intelligent power/network monitoring tools can then all be integrated into the DCAM product in essence becoming a DCIM. This is something that many companies will take several years to mature to once they have their data center asset management accurate and a robust process and tools to maintain.

What are the key benefits of DCAM?

Simply put its understanding what I have in my data center, where it is located and how much spare capacity I have

available. To be able to quickly identify where a physical device is located when a problem occurs sounds easy BUT without accurate asset management you could be searching for a device for some time as the logical information given through alerting tools will not pinpoint its physical location. The Trackit Solution provides both a mobile solution that is tablet based to easily collect and maintain data center assets with our drag and drop and point and click functionality selecting the correct manufacturer, model and series of a device from the Trackit symbol library and then dragging this into a "u" position in a rack is effortless. With the adoption of our 2D intelligent barcoding you can also embed up to 10 fields of data into a 2D asset tag, print this at the rack with our portable solution giving over 80%+ time saving for future validation and verification. DCAM is the foundation and starting point required to mature into DCIM and there is by far not enough focus on this in the industry today.

How do you go about helping customers improve asset management data quality?

Great question. Trackit has a few ways to help. Firstly we have teams of auditors that we can deploy to carry out either a fresh audit from scratch or what we would term as a validation audit, this involves importing customer's existing asset data into the Trackit solution and then taking this onto the data center floor and validating the accuracy and updating/modifying to improve accuracy. Both methods are very quick with an average collection speed of 1,000 devices audited per day using 4 auditors. Accuracy is key and in many cases to truly achieve 99% accuracy an audit and then validation needs to be conducted ensuring change control is also put in place for the duration of the audit to capture any change whilst the audit is in progress.

Are there tools on the market today that can collect the physical location data automatically?

In one word NO. There are tools on the market that will act as sniffers on the network and provide back information like mac address, IP address and monitoring of hosts but there is nothing that can automatically give the physical location of the device, this is the reason we developed Trackit Mobile. In the future it is thought RFID solutions will become more accurate and less costly to implement, at Trackit we are continually reviewing this but today RFID seems to be a costly solution not providing the accuracy to the "u" position for devices without retro fitting sensors in every rack and RFID tags on each device, in many cases this is just too costly and difficult to retro fit.

What advice would you offer to customers looking to deploy a DCIM/DCAM solution?

Well there are a few key things to remember when looking to select a solution, first of all what are my needs and requirements? Many companies try to "boil the ocean" by looking for a solution that will provide many features and functionality that will never be adopted or fundamentally should not be part of the original scope/requirement, these "bells and whistles" may seem nice to have but are they really going to provide meaningful data?. Keep it simple, what information is going to add value to the business and be maintained without too much extra effort. What resources do you have available both from a financial and labour perspective both for initial deployment and getting the solution in place? What budget do you have to further maintain the solution once it is in place? Some solutions require allot of daily maintenance to maintain good quality data and meaningful reporting. Do you need to have a dedicated team to manage your DCIM/DCAM environment and if so what skills do they need? Again some solutions will require specialist reporting skills or knowledge of data base structures in order to maintain tools.

What does Trackit have on its roadmap next?

We have many new features and additional functionality being developed for our version 8 release due out later this year but in true to the essence of the company and our ethos we are keeping things simple and un-complicated. Our focus is to continue to add functionality that is what our customers really need and develop it in such a way that they can adopt and maintain this themselves with very little assistance. We will be keeping the basis of our core products the same but adding some additional flexibility through the platform of our product to enable quicker and slicker integrations with other best of breed tools. We are also focusing on some of the problems felt in the market today around compliance and asset management and this will bring enhanced features to drive additional value from our products. We have an exciting roadmap and happy to share further details with any organisation that wants to contact us direct and engage into an NDA agreement.

Finally, who would benefit from the Solutions you offer?

I would simply say if you run a data center that has 10+ racks or multiple locations that have from 10 to 10,000 racks and want to understand what you have, where it is located, get a physical top down and elevation view of all your devices from a web based portal and maintain and report on this simply then this product is for you. We haven't yet found a client that is too big or too small to help as our solution is scalable and in comparison to DCIM tools in the market today a fraction of the cost to purchase, implement and maintain. We drive very quick return on investment by getting customers up and running very quickly regardless of size and scale. If you are looking to consolidate existing facilities and need an accurate view of what you have to start the planning process then the audit service combined with the Trackit Enterprise and Trackit Mobile solution is perfect. We have conducted business all around the globe for small and large local and global businesses.

May companies approach you with the purpose of an exchange of experience?

Yes, it's great to hear from other organisations around their experiences and learn about how other companies deal with implementing solutions to help asset manage their data centers. We regularly get involved in lunch and learn events and breakfast meetings where we can share our experiences with others around the pitfalls of deploying such solutions. Please contact me: info@trackit-solutions.co.uk

About Trackit Solution Ltd

Trackit was formed in 2008 starting out as an auditing business to carry out data center audits for the population of DCIM/CMDB tools. Audits have been conducted all around the world with 2013 seeing the milestone millionth device audited. In order to collect data more efficiently and accurately we started to develop what was then a palm based application that has matured into what is today Trackit Mobile. Trackit Mobile is a tablet based application (web based) for auditing and maintaining data center assets. With an easy to use interface and drag and drop functionality it is clear to see the value of this application reducing the manual effort of data center auditing by over 80%.

Following the success of Trackit Mobile and the auditing service we then went on to develop the Trackit Enterprise application as it was clear the market needed a light weight solution for data center asset management and an alternative to complex and expensive DCIM solutions, Trackit Enterprise was born.

Today Trackit Enterprise and Trackit Mobile are being used by some of the biggest global banks, telecommunication companies and retailers to manage and maintain their data center assets. The solution has been adopted both as a front end to existing DCIM/CMDB tools enabling the Trackit Mobile solution to act as a front end to these existing tools and an easy method of validating and updating data. The Enterprise solution has been deployed to manage many data centers around the world and some key advantages of the solution is the speed of implementation and getting data into the product, the ease of use for staff using the application and the ability to create custom reports with Excel like features simply within the product.

Trackit is quite simply about providing an alternative solution to DCIM giving over 80%+ of the functionality of DCIM for around 20% of the cost for both implementation and ongoing cost. We are all about making data center asset management less complicated giving rise to an easy to use, intuitive product.

www.trackit-solutions.com

Roland Galler, yandree GmbH

Professional History:
Senior Consultant, and responsible for strategic alliances at yandree GmbH since 2012. Support for customer projects and the development of an international Partner network.
Technical Consultant at Aperture Software GmbH, a pioneering and leading company in the DCIM environment, 2006-2011. Implementing and leading of international customer projects and training.

Qualification:
Master degree in Information Management,
University of Applied Sciences, Graz, 2001-2005

Mr. Galler, the staff of yandree GmbH have accompanied many international companies through infrastructure projects and the implementation of DCIM tools. What are the challenges involved in a DCIM implementation?

The biggest challenge in the implementation of new software, and this is above all the case for DCIM systems, is the successful and as comprehensive as possible migration of the inventory data into the new system. This task is often undervalued. The customers then have a new system at their disposal, but the data that they are accessing is incomplete. As a result, the usage of the new software stays well below the level that would be possible.

Why does yandree concentrate specifically on the accompaniment of DCIM implementation?

It is in the nature of a DCIM solution that the various documentation systems that the customer has been using will be replaced. Previously, the data of these systems had been updated generally independently from each other. Now this data should be transferred into a holistic system, which means that there should be integrity and alignment across the data from a variety of data sources, something which before now was not required. In this case, the challenge is particularly vast.

How do you go about improving data quality?

We have more than 10 years of experience with implementation of DCIM systems, and we have learnt in many varying projects what is important. This knowledge has flowed into our "DeeCeeSqueezer", which, as a core component, identifies a data structure which contains exactly those data attributes which are necessary for DCIM systems. With the help of this "Data Washing Machine" – as we call our "Squeezer"– we can check all existing sources of documentation and data in the company for their quality and DCIM suitability. At the push of a button, the customer is given an overview of gaps in the documentation and flawed data, and can improve these according to their own priorities. These corrections can be undertaken very efficiently, because our "Squeezer" first identifies all the errors which have the greatest impact on the overall result.

Shouldn't this integration of the existing data landscape, and the checking and improving of the data, be a task for the DCIM producer?

The task of the software supplier is to ensure that the system really meets the requirements of the customer, that it functions, and that there are reliable and effective interfaces in order to import data into the system. The quality of the data that is imported can not also be the responsibility of the producer.

Can't this missing or flawed data be ascertained using Auto-Discovery?

Auto-Discovery is important and helpful, but is only a part of the whole. DCIM systems also need to supply information ranging from the floor plan of a data center, to the position of the racks, and through to preferably exact details of where particular pieces of equipment or cables or power connections are located. That is not possible with Auto-Discovery, or only with a large investment and a lot of effort. In addition, Auto-Discovery only includes active components, and that is not sufficient. The data that are obtained from such systems need to be compared with other existing infrastructure data, and that is exactly what we do.

Why, in your view, should one invest in data analysis even before the implementation of a DCIM system?

The alignment of various data sources is a very complex process, which can be efficiently performed with our tools – and the customer only pays for the tools as long as they are actually being used. We also attempt to plan the improvement of the data quality preferably outside of the narrow time-window of a software implementation, in order to be able to dedicate more time to the task and make strong use of the internal manpower, which also has a positive effect on the costs. And then there is the more comprehensive use of the DCIM system. Only high-quality data allow an exhaustive use of the possibilities of these complex systems. That is perhaps the most important point.

In which phase of the DCIM implementation should potential customers speak to yandree GmbH?

Ideally, speak to us before you have even decided on a new system. The improvement of data quality is even more cost-efficient and promising of success, the more time I have for it. We will look at your data landscape and tell you exactly where you should begin. You can track the success of your quality improvement day by day with the help of our software tools. You can see exactly where there is the need to act, and can provide precise support.

Then, is it too late when the decision for a DCIM system has already been made?

No. It's never too late. Even if the decision has already been made, the quality of the data will still need to be worked on before the data is migrated. We also work together with the producers of DCIM systems and support them in implementation and data migration. Also here, we make use of our tools, and in this way we allow a rapid and as comprehensive as possible migration of the inventory data.

Who should make use of your tools and services?

We cater for all companies who want to improve the quality of their IT documentation. The goal does not need to be the implementation of a DCIM system, even though that is often the case. We also have special solutions for customers who wish to stay with their old systems, but seek an improvement in the quality and the availability of their data.

May companies approach you with the purpose of an exchange of experience?

Of course – with pleasure, at any time! I can be contacted at the email address roland.galler@yandree.com or on the telephone number 0043 316 820 106 and I look forward to every exchange on this topic, be it with potential customers or producers of systems.

About yandree

yandree GmbH is a specialist for data center documentation and offers a variety of tools and services which are both helpful and necessary for achieving optimal documentation. In this context, the quality of data is always a central concern for yandree.

yandree was founded as a limited company (GmbH) in Graz, Austria, and partner companies represent the firm in Germany and Austria. The staff of yandree have previously worked for another organization which introduced world-wide the documentation system of one of the market leaders in the area.

www.yandree.com

Product Information

Preliminary Remark

The following information was supplied by product providers in the questionnaires. The providers are responsible for the correctness and the completeness of the information.

Wherever possible we have summarized the information, so that you have a direct comparison.
From every provider we have brought together further information; as the information is based on the answers given in the questionnaires, the structure is not unified.

Participating Companies

Company	DCIM Product Name / Current Version Number	DCIM solutions since	Contact Person DCIM Germany	Contact Person DCIM Europe	DCIM Website
ABB	Decathlon for Data Centers Version 3.1	2012	Andreas Ganz andreas.ag.ganz@de.abb.com	Arun Shenoy arun.shenoy@ie.abb.com	www.abb.com decathlon
AixpertSoft GmbH	AixBOMS Data Center Management Version V9.1.0.5. SP7	2004	Holger Nickel holger.nickel@aixpertsoft.de	Holger Nickel holger.nickel@aixpertsoft.de	www.aixpertsoft.de/aixboms_app_dm
AT+C EDV GmbH	AT+C VM.7 Version 8.8	2008	Stefan Burger info@atc-systeme.de	Stefan Burger info@atc-systeme.de	www.atc-systeme.de/index.php/atc-en
CA Technologies	CA DCIM Version r4.5.01	2008	GermanyMKTG@ca.com	GSC Customer Care Weblink: https://communities.ca.com/web/guest/customercare	www.ca.com/de/opscenter/ca-dcim.aspx
COFELY Deutschland GmbH	COFELY AXI.COS	2008	Jan Göbel jan.goebel@cofely.de	Jan Göbel jan.goebel@cofely.de	www.cofely.de/de/loesungen/technik/msr-und-gebaeudeautomation/
Cormant, Inc.	Cormant-CS Version 7	2003	Paul Goodison pgoodiso@cormant.biz	Paul Goodison pgoodiso@cormant.biz	www.cormant.com
DataCenterVision S.A	DataCenterVision Version 1.40	2010	Philippe Haustete p.haustete@datacentervision.com	Philippe Haustete p.haustete@datacentervision.com	www.DataCenterVision.com

Company	DCIM Product Name / Current Version Number	DCIM solutions since	Contact Person DCIM Germany	Contact Person DCIM Europe	DCIM Website
Emerson Network Power	The *Trellis*™-Plattform Version 3.1	1999	Wolfgang Goretzki wolfgang.goretzki@emerson.com	Wolfgang Goretzki wolfgang.goretzki@emerson.com	DCIM. EmersonNetworkPower.eu and SeeTrellis.com
FieldView Solutions	FieldView Version 6.0	2006	Partner in Europe: Andrew Gibson Andrew.gibson@ait-pg.co.uk	Partner in Europe: Andrew Gibson Andrew.gibson@ait-pg.co.uk	www.fieldviewsolutions.com www.ait-pg.co.uk
FNT GmbH	FNT Command Version 9.6	2009	Oliver Lindner oliver.lindner@fntsoftware.com	Oliver Lindner oliver.lindner@fntsoftware.com	www.fntsoftware.com/DCIM
IMS GmbH	IMSWARE Version 2014	1987	Dr. Christian Bernhart christian.bernhart@imsware.de	Dr. Christian Bernhart christian.bernhart@imsware.de	www.imsware.de
iTRACS, a CommScope Company	Converged Physical Infrastructure Management® (CPIM®) Version 3.2	2009	Stefan Vogt stefan.vogt@commscope.com	Rogier den Boer rogier.denboer@commscope.com	www.itracs.com www.commscope.com
OSL Gesellschaft für offene Systemlösungen mbH	OSL Unified Virtualisation Environment	2002	Thomas Matthes thomas.matthes@osl.eu	Thomas Matthes thomas.matthes@osl.eu	www.osl.eu/products/uvs/uvs_e.html
Panduit	SmartZone™	2009	Hayo Volker Hasenfus d-hvh@panduit.com	Alexandra Bannerman gb-alba@panduit.com	www.panduit.com/dcim
Rackwise Inc	Rackwise DCiM X Version 10.1.1.54	2005	Edward F. Higgins ehiggins@rackwise.com	Edward F. Higgins ehiggins@rackwise.com	www.rackwise.com
Raritan Deutschland GmbH	dcTrack® Version 3.1	2007	Oliver Hess	Florent Lariviere	www.raritandcim.com
Schneider Electric GmbH	StruxureWare Data Center Version 7.3.6	2007	Michael Chrustowicz Michael.Chrustowicz@schneider-electric.com	Soeren Schroeder Soeren.Schroeder@schneider-electric.com	www.schneider-electric.co.uk/sites/uk/en/products-services/critical-power-cooling-services/products-offer/struxureware-for-data-centers/struxureware-for-data-centers.page
speedikon Facility Management AG	*speedikon*® DAMS Version 5.5 also named: DAMS	2002	Walter Krämer w.kraemer@speedikonfm.com	Hans Werner Eirich h.eirich@speedikonfm.com	www.speedikon-dams.de www.speedikon-dams.com
TKM – Telekommunikation und Elektronik GmbH	AIM System – FUTURE-PATCH	2008	Timo Sonntag t.sonntag@tkm-gmbh.de	Timo Sonntag t.sonntag@tkm-gmbh.de	www.future-patch.de
tripunkt GmbH	Pathfinder Version 2.5	2006	Sebastian May sebastian.may@tripunkt.de	Christian Forberg christian.forberg@tripunkt.de	www.tripunkt.de

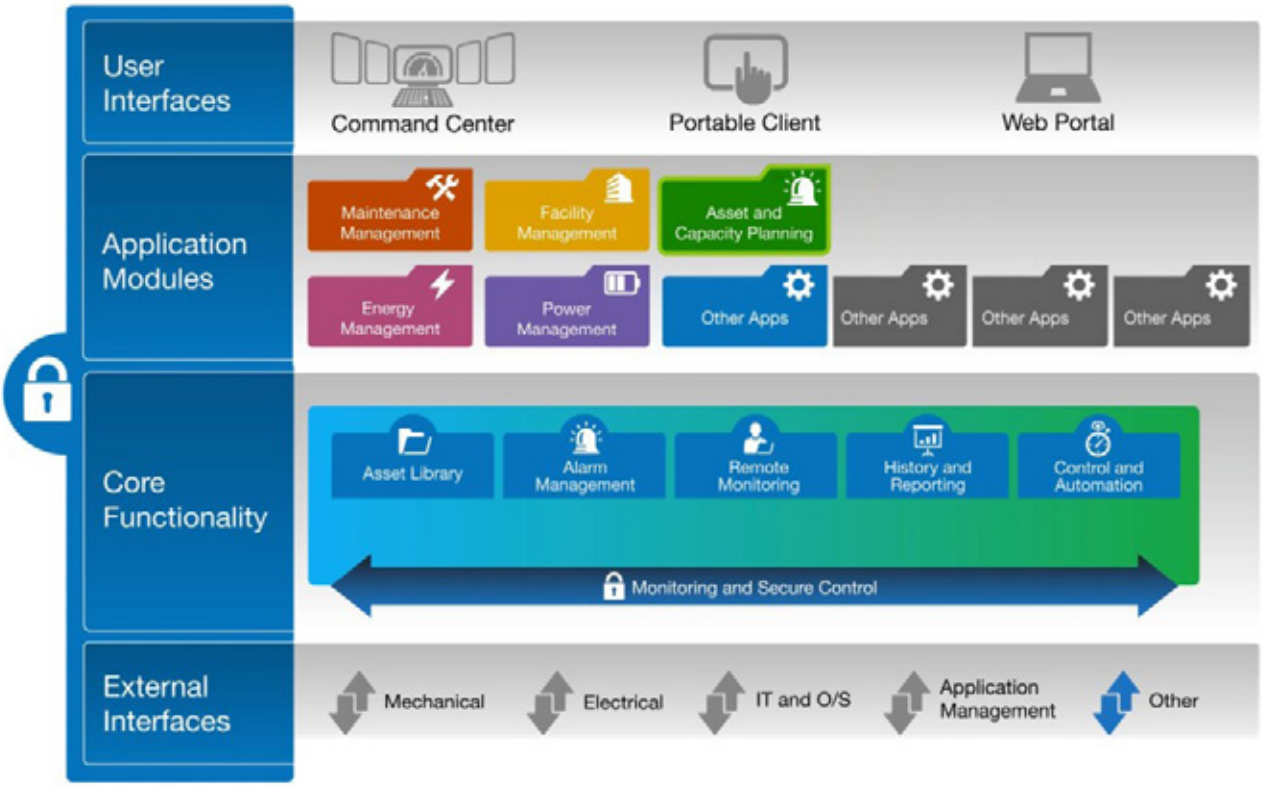
Supplier
ABB

Short Introduction: Company

ABB in Germany achieved in 2013 a turnover of 3.37 billion euros and employed approximately 10,000 people. ABB is a leader in power and automation technologies that enable utility and industry customers to improve their performance while lowering environmental impact. The ABB Group of companies operates in around 100 countries and employs about 150,000 people.

Short Introduction: DCIM solution

Decathlon provides the tools to manage a flexible network of power, cooling and IT systems through a single operational environment. It is the only DCIM system that tightly integrates with third-party applications. Delivered via hardware and software, Decathlon provides the visibility, decision support and centralized control technologies across data center operations worldwide. Decathlon allows you to see system performance and environmental factors that would typically go unnoticed until it is too late. Decision support is provided in a context-sensitive manner, so that historical trends, forecasts, workflow processes, intelligent alarms and incident reporting provide the right information quickly for rapid response and resolution. Decathlon's centralized controls enable efficiencies through automation, helping to reduce human error. These capabilities are provided through real-time monitoring and analysis based on ABB's rich history in mission critical industrial applications.



Product History

ABB's core platform upon which Decathlon is based was launched in 2002 and is in active operation in almost 10,000 mission critical sites, many of them data centers, in almost 100 countries.

Decathlon v1 was launched in 2012, with v2 being offered as General Availability since Nov 2012. In that time Decathlon has already been integrated with leading Mechanical, Electrical and IT systems and this approach to open integration is set to accelerate.

Reference Projects

"Customer 1" under NDA-, in India

Decathlon is used to provide advanced and highly reliable power management capabilities including real-time monitoring and control. They have established a real-time visibility platform covering all aspects of their electrical systems and equipment. Customer also are now able to operate multiple sites with a high degree of automation in equipment controls, alarming and fault diagnosis and resolution resulting in better data center performance and reliability.

"Customer 2" under NDA-, in Switzerland

Decathlon is used for real-time visibility over all aspects of electrical and mechanical systems with a high degree of automation in equipment controls, alarming and fault diagnosis and resolution. They also automatically match power demand with supply to optimize the flow of power to and from the grid. Decathlon also provides them with highly advanced operator environments, enabling them to bring together disparate systems, teams and data into a single high-performance operator environment.

"Customer 3" under NDA-, in USA

Decathlon is used to see the entire picture across IT and facilities enabling them to optimize their operations. Decathlon monitors the power train, BMS and other facility systems to provide a holistic view of the data center. In addition to achieving real-time visibility of the facility systems they are able to monitor and provide live capacity utilization reports which track racks and servers, plans adds, moves and changes and allows them to maximize the use of space, power and cooling.

"Customer 4" under NDA-, in China

Decathlon is used for real-time monitoring and control of the cooling system and data center environment. They have delivered environmental monitoring with real-time temperature and humidity control enabling improved operational risk, efficiencies and fault diagnosis and resolution. They also use Decathlon to monitor the power train to achieve real-time visibility of the electrical system and power usage.

Special Features of the Solution

Decathlon is based on ABB's System 800xA which is in active operational use in almost 10,000 mission critical sites worldwide. It is also the only DCIM that tightly integrates with 3rd party equipment, systems and protocols. Its strong focus on creating single, real-time, mission critical reliable operating environments is based on ABB's position as the #1 worldwide provider of industrial automation solutions. Decathlon brings advanced industrial technology to data centers, today.

Supplier
AixpertSoft GmbH

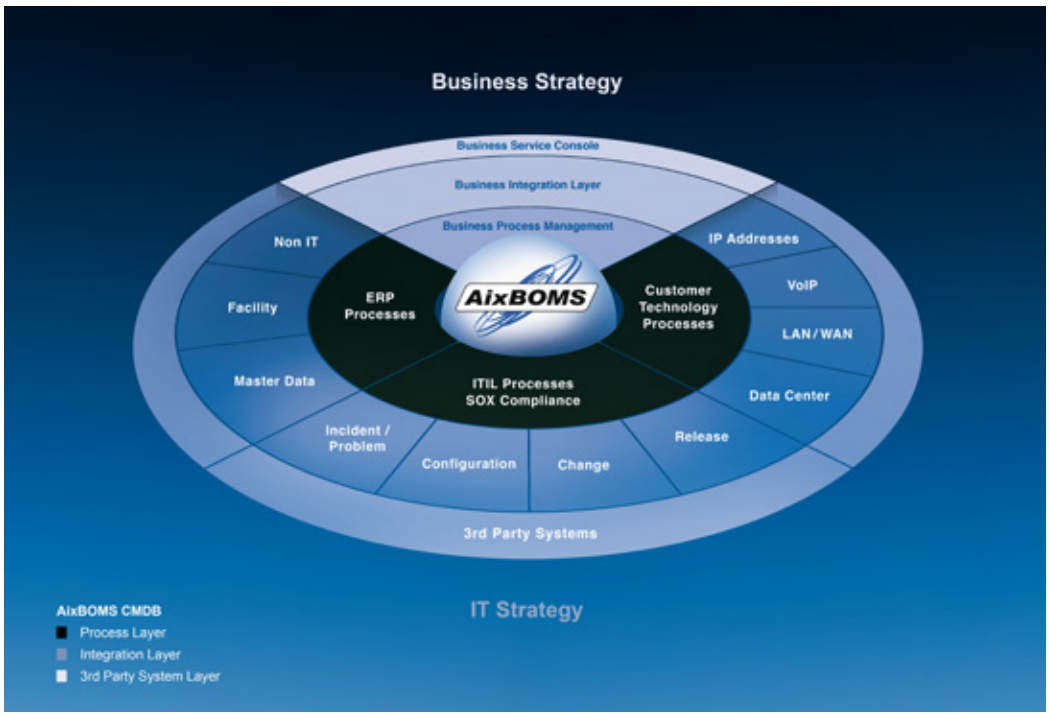
Short Introduction: Company

AixpertSoft GmbH was founded in 2006 as a spin-off from the consultancy ComConsult Kommunikationstechnik GmbH. The main focus is development and sales of solutions relating to Data Center Infrastructure Management (DCIM), CMDB and ETL. The AixBOMS product line continues the consistent success of its foundation stone, set in the early 1990s, the product CCM (ComConsult Communication Manager), and is continually expanded to include the latest technologies and areas of application. More than 500 projects of varying sizes have been realized on the basis of this product line.

Short Introduction: DCIM solution

The DCIM solution (DCM Module) is part of a CMDB (CMS) complete solution. As a result of unified software architecture, the solution avoids the use of numerous "system silos" (many individual software systems with problems to integrate), but rather, on the basis of a unified core, offers many topics of a similar nature (such as BSM and service management, (network and system) monitoring, configuration and asset management, ITSM and work order integration). This allows a unified and comprehensive graphic visualization. As a result of a large amount of CMDB experience, the integration of "external data" (from sensors, discovery systems, data bases, further systems) is made possible on the basis of an open ETL tool (Integration Engine).

LiSA DCMS (Data Center Management Software) is marketed as a solution for SMBs via the partner Huber&Suhner (CH) (no customization, a slimmed-down function module, limited to 50,000 configuration items).



Product History

The core of the solution goes back to the 1990s (here: configuration management and cabinet view with AutoCAD visualization). Areas (including billing integration) were made available as separate object types as early as 2004 as DCSM (Data Center Space Management). The current solution DCM (incl. power and climate administration, capacity, dashboard, planning mode, workflow and change management) has been available since 2009.

Reference Projects

Multinational Industrial Group

Administration of data centers incl. equipment management, networks, host name allocation and addressing, worldwide. Planning for new buildings, re-location, change management planning and implementation. Documentation of the system lines (services) for internal and external IT (customer services). Integration of monitoring and surveillance. Implementation of data zones (multi-tenancy solution). Quantity: 70,000 CIs.

Major International Bank

Administration of data centers incl. equipment management, cable management, planning for new buildings, re-location, change management, network administration. Linking of external systems (e.g. ITSM). Quantity: 200,000 CIs.

IT and DC provider for German Federal and State Authorities

Administration of the complete IT landscape, incl. networks, network addresses, network paths, cable management. Allocation of networks, network paths for customers (police, hospitals, schools, authorities). Log file functionality for BSI Grundschutz certification (audit security). Power management incl. power distributors, power hierarchies, fuse circuit management, PDUs. Quantity: 100,000 CIs

Major Postal and Telecommunications Service Provider

IT administration for more than 3,000 locations, incl. cabling, cabinet administration, network and addressing. DDI integration, control of the complete IT landscape. Quantity: several 100,000 CIs.

Special Features of the Solution

Besides more than 20 years of experience, AixBOMS offers solutions in almost all areas of IT Management. Continually growing as a result of the projects and requirements of the large corporate clients, today AixBOMS delivers an unparalleled modular breadth and depth of functionality. As a result system silos are avoided for the customer, and a strong differentiation to common DCIM solutions (whose focus often is on energy efficiency and very basic equipment and space administration) is possible.

AixBOMs is not just a passive documentation and capacity tool, but rather it allows the configuration and control of active systems like network and system monitors, service consoles, network configurations (DDI) and telephone systems.

A culture of innovation is an integral part of our company philosophy. This resulted in the following milestones: our first Problem Management solution becoming available in 1993, our first Cabinet and Floor Plan visualization (AutoCAD-based) in 1996, Web-GUI in 1998, Web-Architecture in 2000, Staging Area in 2002, Area management and BSM in 2004, Integration Engine in 2007 and a completely new JAVA based product generation (AixBOMS IX) in 2009.

Supplier
AT+C EDV GmbH

Short Introduction: Company

AT+C EDV GmbH is a manufacturer-independent system house and has been involved since 1987 in the development and sales of technical software with a focus on facility management (CAFM), cable management, and data center and network documentation. AT+C set itself the goal of using synergy effects in the operation and the management by using the same building- and data model for all involved departments.

Short Introduction: DCIM solution

AT+C VM.7 is a manufacturer-independent information and planning software for IT and building infrastructure. The software supports users with the comprehensive documentation of data centers, networks, the assets concerned and their cabling. The Connection Manager VM.7 visualizes the actual condition of the network infrastructure on the basis of real-time data and supports the user in the daily tasks of data center management and in planning. The data structure can be adapted to requirements using a modular design, so that the solution is easy to implement and can grow with future requirements.

Product History

Already in the early 1990s AT+C recognized the synergy effects that arise from a holistic infrastructure management solution. The existing CAFM software was successively expanded to include functions for cable, network distributors and data center management. AT+C VM.7 is a consistent further development of established and mature products with a focus on IT and data center infrastructure.

Reference Projects

On request we are happy to give details about the projects airport Zürich, airport Milano Malpensa and Linate, NTT DoCoMo and SPIE GmbH.

Special Features of the Solution

With AT+C VM.7, the management of a range of technical systems is possible in a central and collective data base. Users benefit from a flexible, expandable data model, which allows them to choose their own focus. Manufacturer-independent, AT+C VM.7 draws on open standards, which means that any hardware can be integrated into the monitoring. Modules for mobile data entry, inventory management, access control and visitor administration round off the offer.

Even in its basis, the AT+C VM.7 solution offers areas, cabinet and asset management, including SNMP monitoring and reporting. Data center floor plans can be imported through a CAD interface, areas can be defined in any hierarchy, and a layout plan can be generated. Connections to the IT components over cables or patches can be documented. In addition, routes, incl. power and data cables and piping can be integrated into the management.

Through the modular construction, AT+C VM.7 can be flexibly expanded in its functionalities. The transparent planning mode supports the change management process, without changing the actual state of the documentation. The web client incorporates any number of work stations without software rollout; maintenance work is documented through the VM.7 Service Export module and is audit-proof. In order to gain an overview of the complete communication infrastructure, VM.7 automatically generates at network spider diagram.

Supplier
CA Technologies

Short Introduction: Company

CA Technologies (NASDAQ: CA) is a leading independent enterprise information technology (IT) software and service company with expertise across IT environments — from mainframe and physical to virtual and cloud. We develop and deliver software and services that help organizations manage and secure their IT infrastructures and deliver more flexible IT services. This allows companies to respond to business needs more effectively and efficiently.

Short Introduction: DCIM solution

CA Data Center Infrastructure Management (CA DCIM) captures detailed real-time information about energy use across your data centers and operational facilities, helping enable you to measure, trend, alert, and take action. CA DCIM also helps you visualize your data center environment in 3D and manage the space, power and cooling capacity of your environment to better meet your business objectives. The solution also provides a baseline from which you can measure cost savings, improvements in capacity, and operational reliability and performance, as well as deliver continuous information for ongoing improvement.

Reference Projects

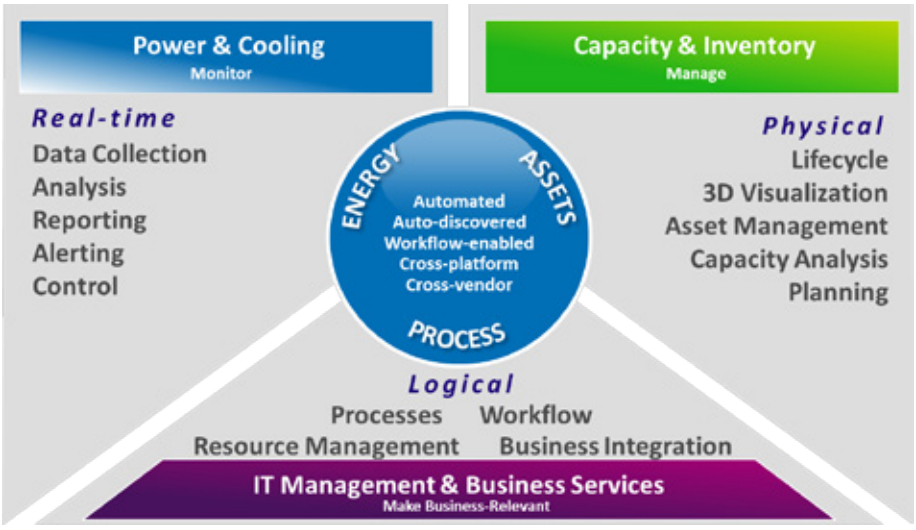
Facebook
https:// www.ca.com/us/register/forms/collateral/facebook-uses-ca-technologies-as-the-foundation-for-its-broad-dcim-platform.aspx

Logicalis
http://www.ca.com/de/collateral/success-stories/na/roi-case-study-logicalis-achieves-159-roi-with-ca-dcim-solution.aspx

RagingWire
http://www.ca.com/de/collateral/success-stories/na/ragingwire-guarantees-100-percent-uptime-using-tools-from-ca-technologies.aspx

Stratitshpere
http://www.ca.com/de/collateral/success-stories/na/stratitsphere-enhances-competitive-advantage-with-proactive-data-center-power-management.aspx

Special Features of the Solution



Data collection: Combines data from various devices that communicate across a wide range of protocols including SNMP, Modbus, and BACnet devices.

Calculation engine: Built-in formulas and calculations. Create elements that can calculate and store any user-defined variable data with every poll. Live reporting, trends and chargeback reports.

Advanced alerting: Provides alerting and control functionalities for IT infrastructure and facilities devices via energy monitoring system.

CA Visual Infrastructure (CA VI) is an integral component of the CA DCIM solution. It is an easy to use 3D application designed to help users design and build racks located in the data centers. Using the library of developed stencils, users can recreate a representation of the actual racks and view both device and rack level data related to weight, power consumption, heat dissipation or available space. The powerful modeling tool will suggest rack locations and port assignments for power, network and fiber connections based on rules defined in the system. Users can also generate what-if scenarios for outage analysis if a device fails as well as configure all power, network and storage interfaces and map those interfaces to the connected devices. With CA VI users can also utilize a series of data center facility views called "floor plan Layer" to give the user a single holistic view of the data center to help enable better capacity management in the areas of space, power and cooling.

Supplier
COFELY Deutschland GmbH

Short Introduction: Company

Cofely is Number 1 in Europe for energy and environmental efficiency, as well as being the leading German specialists for plant engineering, plant and process technology, facility management, energy management and industrial refrigeration technology. Cofely divides their German activities into four business areas: plant engineering, facility services, energy services and refrigeration technology.

Short Introduction: DCIM solution

The AXI.COS-DCIM is an individual, customer-specific DCIM solution. It offers the advantages of conventional systems and integrates on a technology-neutral basis into the complete infrastructure of the DC. Making use of standard web technology and data transfer via SNMP, Mod-Bus etc. a central DCIM surface is created. All measurements and alarms of the subsystems can be operated and analyzed over a central platform. This provides a complete overview of the infrastructure of the DC (cooling system, cooling in server room, air-flow, power supply, counters and sensors for temperature and humidity, service levels, alarms). In addition, the IT DCIM applications are integrated as a subsystem (cable management, area management, data from the racks, etc.). A emergency/danger management system can also be integrated. With integration on a technology-neutral basis, a high level of energy efficiency can be achieved. Access via web-technology can realised without central systems by the de-central automation stations. This results in a high availability for the entire system.

CORMANT™
DCIM And Beyond

Supplier
Cormant, Inc.

Short Introduction: Company

Cormant is a global DCIM software company revolutionizing the way data center and IT infrastructure managers oversee their infrastructure, equipment and connectivity. Founded in 2001, Cormant remains a leader in DCIM (Data Center Infrastructure Management) solutions with staff and/or partners located on six continents. Cormant's key product, Cormant-CS, is one of the most widely adopted DCIM solutions in the world with large customers spanning nearly all industries.

Short Introduction: DCIM solution

Cormant-CS is a world-leading DCIM solution that manages all DC infrastructure from Buildings, Rooms, Racks, Power, Connectivity, Networks, Servers and Virtual Servers for Data Centers & beyond. Cormant-CS provides a unique level of configurability along with total portability ensuring data is always kept up-to-date. The holistic view and reports of Cormant-CS provides vital information for effective enterprise planning and change management.

Product History

The first version of what is now Cormant-CS (the product was originally launched as "CableSolve") was launched in 2003. From the first version mobility was a core part of the solution. In addition, the notion that equipment had to be represented completely was considered important. Initial focus also included connectivity. Cormant was the first company to use "Infrastructure Management" as a way of describing its solution. The product continues to be developed to the present.

Reference Projects

Barclays Bank
Global deployment of Cormant-CS replacing several other solutions and consolidating all data in one global instance. Used for DCIM globally. All data centers included in the scope.

Product History

Continuous development on the basis of customer-specific project definitions.

Reference Projects

Details of the projects DC Dataport, DC SW Norderstedt and of other industy, pharma and food projects can be given on demand.

Special Features of the Solution

Flexible, manufacturer-neutral, web-based, customer-specific programming, open for all subsystems on the customer side. The AXI.COS-DCIM brings together the advantages of many existing DCIM systems, from IT applications with the Cofely know-how as a service provider for automation and integration projects. With regard to energy efficiency, the system is fundamentally so aligned that an optimal PUE can be achieved. Cofely, with the slogan "Using energy optimally", has made the topic efficiency into a focal point, which is particularly applied in data centers.

McKesson
McKesson Corporation, a leader in the healthcare industry in the United States, deployed Cormant-CS across its multiple data centers operating at a capacity of over 1,500 racks. Deployment consisted of training, process definition, system configuration, data importation and a physical audit. It resulted in savings in time and money in data entry, reporting and planning and increased financial return due to accurate, automated, cost allocations and chargeback.

Carlton University
Both DCIM and 'beyond' functionality used. Mutiple-building campus with all MDF/IDF rooms, equipment and conduit under the management of the Cormant-CS solution. There have been mutiple expansions over the years. A customer since 2004.

NATO
Used in all operation sites world-wide.

Special Features of the Solution

Cormant-CS is special because:
1) It has a very simple, but powerful user interface.
2) Configurable. User configuration means customers can store exactly the data they want to about any item or connection.
3) Mobility. Data is updated by users as they make change, this keeps the data accurate.
4) Scale. Cormant-CS can scale to one or more sites with over 40,000 racks.
5) Cost. Cormant-CS is the most cost-effective DCIM solution available.

Cormant-CS is a complete DCIM solution offering storage of all types of DCIM information about infrastructure, equipment and connectivity and includes configurable queries to gather environmental, power and other queried equipment data.

Uniquely, Cormant-CS is also used by non-DCIM customers to manage campus and enterprise IT equipment.

Supplier DataCenterVision S.A.

Short Introduction: Company

Born and based in Europe, DataCenterVision is an agile software company, fully focusing on data center management.

Short Introduction: DCIM solution

A powerful and inovative, full-web solution, for global data center management: infrastructure, capacity, operations, power performance & energy efficiency.

Product History

The company was founded in 2010. DataCenterVision has 2 major releases per year, and 6 non-major releases per year.

Reference Projects

"Customer 1"
Worldwide global leader in insurance. 200 racks at main data center, 2000 physical servers.

"Customer 2"
Worldwide global leader in luxury goods. Several data centers, about 100 racks per data center.

"Customer 3"
Worldwide group of 35 non-profit global organizations. Data centers in Europe & America.

"Customer 4"
Worldwide global leader in watch-making industry. More than 20 brands & subsidiaries.

Special Features of the Solution

Our software application has been designed for the data center, and developped with the latest technologies. We have a genuine, true, full-web (only) client. Our development environment, fully owned by DataCenterVision, enables very fast evolutions. Our customers speak about us as a very agile company.

ABB, No. 1 manufacturer of power equipment, worldwide, has endorsed our technology, and now proudly recommends it to its customers.

Supplier Emerson Network Power

Short Introduction: Company

Emerson Network Power, a business of Emerson (NYSE: EMR), delivers software, hardware, and services that maximize availability, capacity, and efficiency for data centers, healthcare and industrial facilities. A trusted industry leader in smart infrastructure technologies, Emerson Network Power provides innovative data center infrastructure management solutions that bridge the gap between IT and facility management and deliver efficiency and uncompromised availability regardless of capacity demand.

Short Introduction: DCIM solution

The *Trellis*™ platform is a real-time infrastructure optimization platform for data centers. It enables the unified management of the data center's IT and facilities infrastructure. It brings the physical layer and the application layer into one holistic solution. The *Trellis*™ platform can improve the change management process, improve accuracy and response time, improve availability through reduced downtime, and help to control costs through meeting or exceeding budget constraints.

I In addition Emerson offers the following solutions in the DCIM environment:
Aperture – A suite of advanced solutions for infrastructure planning, management and performance optimization. It meets DCIM requirements for management and control of physical assets, resources and processes. IT organizations can deliver the highest levels of predictable, efficient IT service, successfully support green intitiatives, proactively manage capacity and optimize resource use with Aperture.

Data Center Planner (DCP) – A visual infrastructure planning and management solution for data center optimization typically for mid-tier data centers. DCP provides data center management with accurate and complete information about where devices and equipment are located, their current capacities and their growth.

DSView – A multi-server software solution that incorporates a hub and spoke framework for database redundancy and distributed access to physical and virtual data center assets. Avocent DSView software is the only solution on the market today that provides centralized and aggregate access to servers, blades, virtual machines, networking equipment, serial consoles and power strips. It provides secure, remote management of all data center assets from a single "pane of glass."

Product History

The *Trellis*™ Platform was introduced to the market in May 2012 with the launch of Inventory/Change and Site/Energy modules. From there, the additional modules of Power and Mobile were added in 2013 and Process Management/Workflow was added in 2014.

Reference Projects

Unpublished.

Additional Information

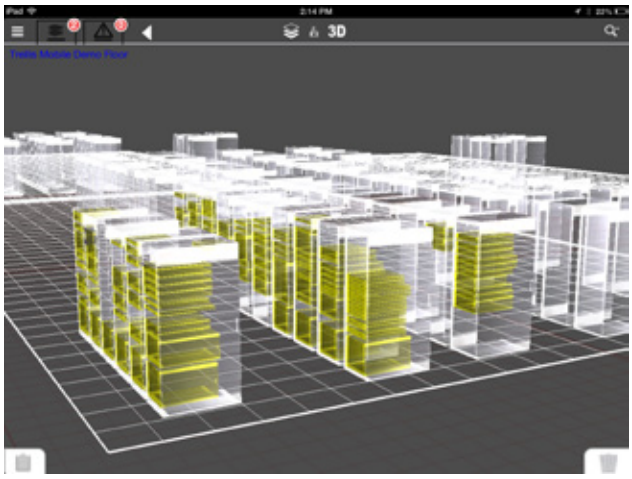
On behalf of Emerson Network Power, Forrester Consulting interviewed a major global bank to examine the potential return on investment (ROI) that can be realized with the Emerson Data Center Infrastructure Management (DCIM) solution. Overall, Forrester Consulting calculated the three-year, risk-adjusted ROI for implementing DCIM in the bank as:
Total Benefits: $1,601,619
Total Costs: $ 799,955
Net Present Value: $ $801,664
http://go.emersonnetworkpower.com/tei

Special Features of the Solution

- Currently the only DCIM-Solution on the market, which is aggregating all time-critical tasks through a scalable hardware component, and that guarantees real-time information at all times.
- Instead of putting existing point solutions into one 'box', Emerson developed a DCIM solution from scratch with all static and dynamic information in one single database to allow perfect correlation of information – *Trellis*™ is a robust, scalable solution that was designed from the ground up to support decisions in increasingly complex data centers in a modular, scalable fashion.
- Interface for ITSM integration.

For DCIM, the Universal Management Gateway (HW) is an important element of the *Trellis*™ platform (SW). Deployed locally or remotely, the appliance enables both real-time data collection and closed-loop control over IT and facilities equipment.

An interface enables the integration of ITSM (e.g. from IBM) and BMS. Combining the capabilities provided by the *Trellis*™ platform with IBM 's ITSM solution provides a complete framework for managing the whole data center. The intelligent, actionable information provided by this combination of IT operations and facility management solutions results in immediate benefits such as: automation of tasks and planning that frees up personnel time; aggregated alerts and events that lead to quicker actions to preserve uptime; granular energy management that results in operational cost reductions; better measurement of performance that creates more reliable services to customers; and more.



Supplier
FieldView Solutions

Short Introduction: Company

FieldView was invented at the request of customers. Our core platform, a web-based enterprise solution, has been leveraged by many of the largest data centers in the US, Europe and Asia since 2006.

FieldView Solutions was established in 2009 when the rights to the FieldView platform were acquired. This allowed us to continue to provide industry-leading data center operations, management and efficiency software solutions as an independent entity.

Short Introduction: DCIM solution

FieldView is a best-in-class, purpose built enterprise monitoring software solution which provides users with accurate, reliable, real-time information on all the critical systems in their data centers, empowering them to make great decisions. We help Co-Location Facilities, Data Center Managers, IT and Facilities people to run their facilities at peak efficiency, reducing the risk of uptime interruptions, and getting the most out of their IT and facilities assets, physical space, cooling and especially their energy dollar.

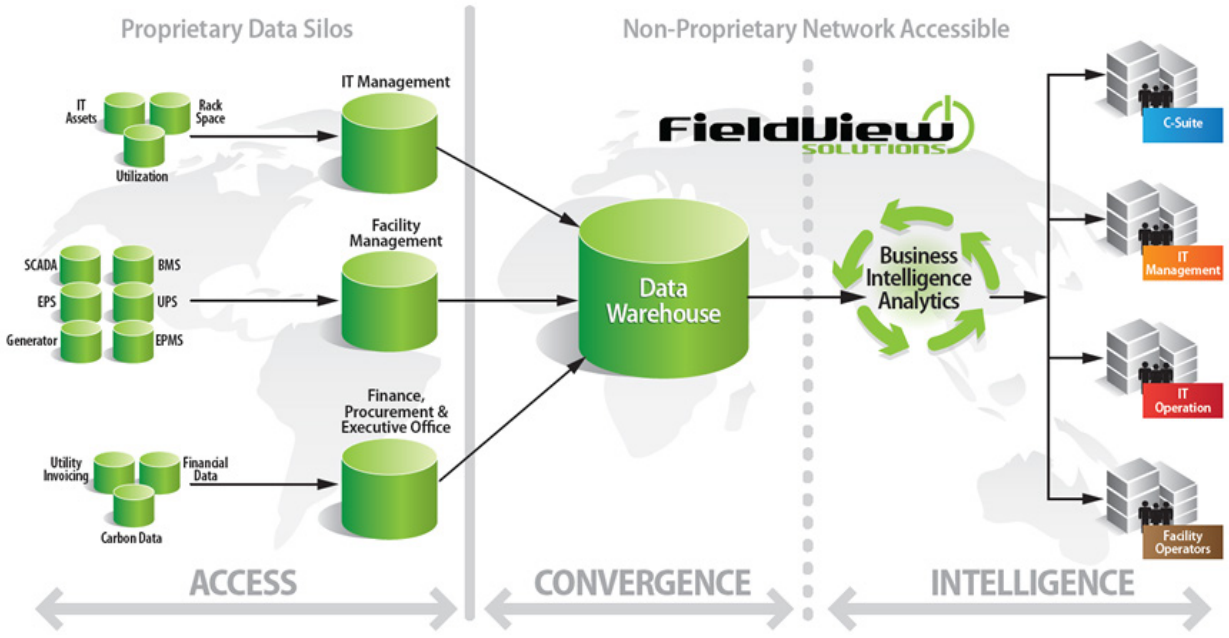
Product History

FieldView was invented at the request of clients who could not find a solution on the market that did what they needed it to do. FieldView Solutions was established as an independent entity in 2009. We are currently ramping up to launch FieldView version 6.0.

Reference Projects

Media/Information Company

With FieldView's real-time information, the company was able to safely consolidate 1,243 traditional servers into 137 blade servers, saving $586,570 in power costs.



Colocation Company

With FieldView's real-time temperature monitoring, the customer was able to safely raise the data center temperture by 9 degrees, over six months, saving $285,120 in energy and passing the savings on to their tenants.

Multi-National Financial Institution

Thanks to the real-time information that FieldView provides, our customer was able to cut the time it takes to place new servers from 2 weeks to about 2 hours. This cut manual labor costs, and had the servers up, running and generating revenue 2 weeks sooner.

A Business Intelligence Provider

Because of FieldView's automation, the company no longer had to perform manual audits of its equipment when they wanted to add assets. This saved 480 hours of manual labor, or about $36,000 in FTE costs.

Special Features of the Solution

The solution is hardware and vendor neutral, it speaks a variety of languages and protocols, is highly scalable, proven, a 100 % browser-based interface, complies with corporate security, is cost competitive, provides actionable, real-time information, low TCO and easily measured, quick ROI.

FNT
// when transparency matters.

Supplier
FNT GmbH

Short Introduction: Company

With headquarter in Germany, FNT's innovative software suite FNT Command is used worldwide as an OSS/IT management application for communications service providers, enterprises and governmental organizations by more than 25.000 users since 1994. FNT's customer base includes a wide range of well-known organizations working in various sectors, such as the automotive industry, banks, insurers, chemicals, energy management, airports, clinics industry, telecommunications and IT service providers.

Short Introduction: DCIM solution

FNT Command® offers a Data Center Infrastructure Management (DCIM) solution as a central management and optimization software for data centers. From the building infrastructure (power, cooling and floor space) and IT infrastructure (such as networks, servers or storage) down to the services (software, applications, and services) the solution enables a comprehensive and integrated view over the data center resources. Besides the building infrastructure/facility data, IT resources and the therefore provided services are recorded in an integrated software solution with a central DCIM repository and are hence available for the planning process. Command provides comprehensive information related to daily data center processes covering both the managing and consolidation of multiple data centers, the set-up of brand-new data centers using detailed space and and capacity planning to carry out situation analysis and capacity planning for power, cooling, and floor space.

Reference Projects

IT Service Operator for Financial Institution (Germany)

Our customer manages three very large zones consisting of several locations each, emphasizing on space management and power/cooling efficiency monitoring. Additionally, the monitoring tool Spectrum is deeply integrated for live monitoring of IT devices. Currently an additional site is designed from scratch in

Command. The customer relies heavily on the analysis and reporting features of FNT Command.

IT Service Operator for Financial Institution (Austria)

The project focuses on optimizing and automating processes in the data center environment and on energy efficiency. The customer also plans all steps involved in migrating old data center rooms into a newly designed and build data center site using FNT Command.

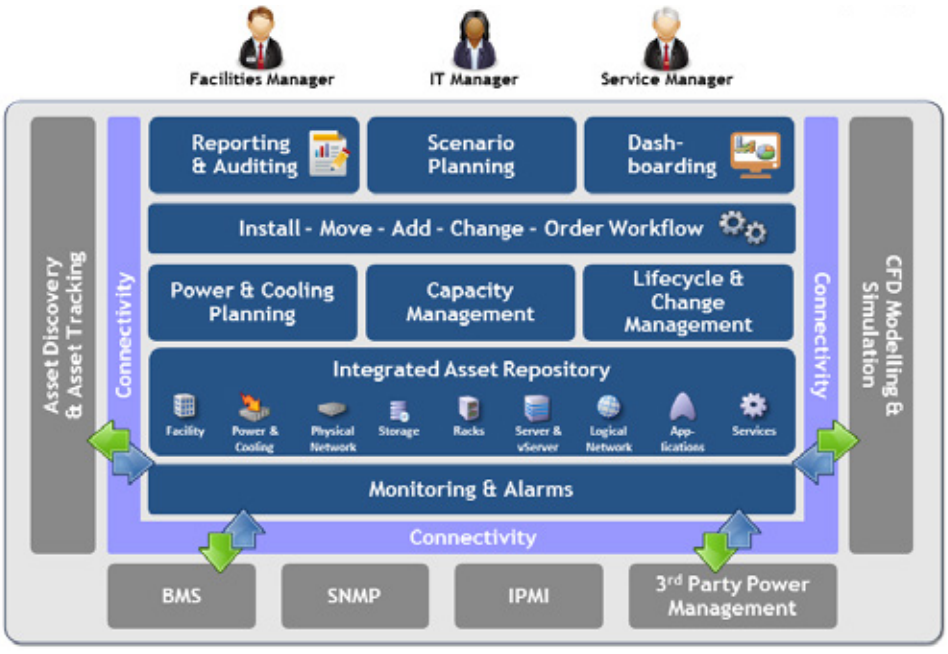
Federal Employment Agency (Germany)

More efficient working for the data center (DC) planning
The IT system house of the Federal Employment Agency (Bundesagentur für Arbeit, BA) is responsible for the operation of fail-safe data centers at the headquarters in Nuremberg as well as for the IT infrastructure in the 1,800 real estates. To increase the efficiency of the organization for DC planning and administration tasks, the IT system house migrated to the FNT Command resource management solution.

Special Features of the Solution

FNT Command offers one integrated solution suite from infrastructure to service management, mapping the whole physical infrastructure up to each service. The unique CI database covering components across all BUs offers a one single source for Facility, IT and Telco operations applying the existing functionality for all business units.

The DCIM solution offers change and configuration management (IMAC) of all components in the IT environment, such as servers, storage systems, switches, and UPSs, as well as the infrastructure components (power supplies, air conditioning systems, and building management systems) and cables. In addition, comprehensive reporting options for fault, real time and climate analysis are provided.



Supplier
IMS GmbH

Short Introduction: Company

The IMS Society for Information and Management Systems Inc, based in Dinslaken is one of the leading software and consulting firms in the fields of cable and network management, as well as property management. As a mature and independent company, IMS has been developing innovative IT solutions since 1987 for industry, trade and service companies, banks and insurance companies, cities, clinics and educational institutions, utilities and communications companies.

Short Introduction: DCIM solution

The IMSWARE DCIM solution supports all processes, from the planning, procurement and operation through to the relocation of the data center, including the calculation of all costs.

As a result, transparent answers are always available for a variety of questions:

- Where is which equipment located in the data center?
- How is the equipment configured?
- What is the power load, climate control load, energy balance?
- What is the capacity of the areas, cabinets, infrastructure?
- What applications are running on which equipment?
- What maintenance is forthcoming?
- What is the situation of contracts and costs of the equipment?
- What equipment is leased to which firms?
- What does the infrastructure cost?

These and many other questions are answered at the press of a button by the IMSWARE DCIM solution. The easy-to-use surface allows quick access to the graphic and alpha-numeric data. Through its flexibility, all technical, commercial and cost-relevant data of the IT assets can be represented.

Product History

since 2000: IMSWARE solution concept with the goals "flexible data modelling, integrated workflow management, CAD, modular construction"
since 2013: IMSWARE as HTML5 web application

Reference Projects

Detailed information about the projects Vodafone Group Services GmbH, Datev eG, Bayer Business Services GmbH and DOKOM GmbH can be provided on request.

Special Features of the Solution

- Modular construction – as a result, high scalability and flexibility.
- Central, object oriented data storage in scalable database.
- Interactive, graphic support – if desired, in 3D.
- Flexible interface to external systems.
- Location-independent data access via WEB-Portal.
- Comprehensive report and analysis possibilities.
- Exact conformance to the company-specific workflows.
- Easy to configure mask design and allocation of rights.
- Cross-company multi-client capability.
- Intuitive controls

iTRACS
A CommScope Company

COMMSCOPE®

Supplier iTRACS, a CommScope Company

Short Introduction: Company

iTRACS is the world's leading provider of open, enterprise-class DCIM Suite Solutions that optimize capacity, availability, and efficiency in enterprise infrastructure. iTRACS is deployed globally in some of the world's most complex data centers and infrastructure environments. More than one-third of iTRACS customers are in the Fortune 500. iTRACS is a Gartner DCIM Cool Vendor and an IDC major player in DCIM. The company was also named the DCIM Value Leader by Enterprise Management Associates (EMA) in January, 2013.

Short Introduction: DCIM solution

iTRACS Converged Physical Infrastructure Management® (CPIM®) is transforming the way organizations see, understand, manage, and optimize their physical infrastructure. CPIM offers the world's first holistic view of the data center using an interactive 3D Model that gives you command-and-control over the complex interdependencies between all key resources – power, assets, space, cooling, connectivity, network services, change management, workflows, and other dynamics at the heart of the physical ecosystem. Using this navigable data center model, you can optimize your resources – and their intricate interdependencies – with insight, granularity, and precision. Fragmented data becomes Holistic Insight, empowering you to manage the physical infrastructure based on knowledge, not guesswork.

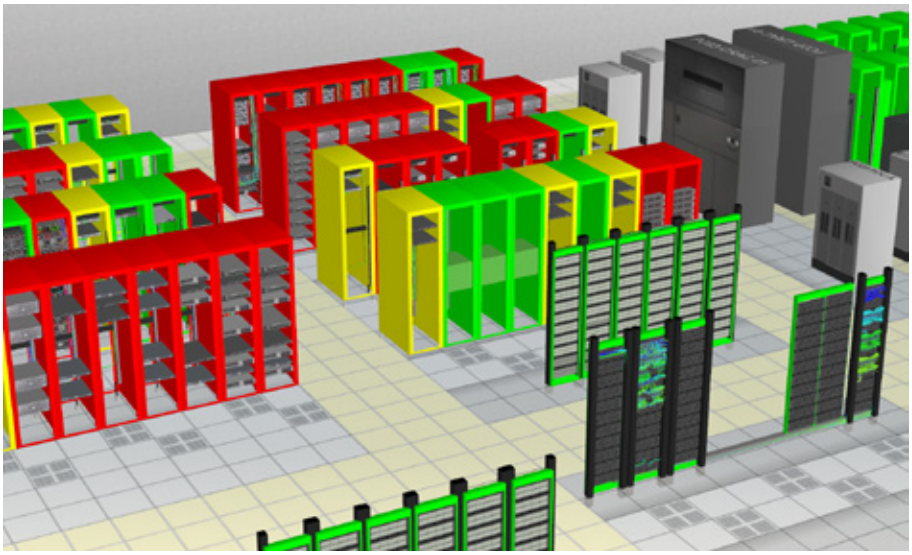
Reference Projects

Global media giant

19,000 floor-mounted assets, thousands of racks across 5 sites worldwide. Hundreds of thousands of servers under management. The customer is optimizing Capacity Management and Capacity Planning across all key resources – power, space, network, etc. Accelerated time-to-value for new servers, cost reduction, and the deferral of capital expense.

Governmental Agency

1,000+ assets across 3 sites with visibility into network cabling and interconnectivity. The agency is reducing labor costs associated with switch port management, changes, tracking, and records-keeping.



Global 100 Enterprise Leader

87% faster time-to-value. Client replaced a laborious, error-prone workflow process with iTRACS' automated workflow management and commissioning tool. Commissioning that used to take 2 hours now take 15 minutes, with the software automatically identifying asset locations with the appropriate space, power, and network services. New servers are commissioned 87% faster to support new business initiatives and demand with unparalleled speed and impact.

Global Media Company

Tens of thousands of assets under iTRACS' award-winning asset management capabilities. Before DCIM, their asset management capabilities were fragmented and encompassed only 68-70% of their overall asset inventory. Today, with iTRACS, they have 99%+ control over their asset inventory – they're streamlining assets costs, managing leases smarter, and conducting rapid root cause analysis.

Special Features of the Solution

iTRACS CPIM® helps you balance the three biggest infrastructure management challenges you face – Capacity, Availability, and Efficiency. You can achieve your goals in any or ALL THREE areas in any combination or priority you choose, without sacrificing one for the other.

What makes iTRACS a global leader in DCIM?

- HOLISTIC: You get the whole picture – holistic management over the entire physical ecosystem, both IT and Facilities, from a single DCIM environment that brings together information across all of your resources. This includes real-time power readings, network connectivity down to every individual switch and server patch, and space visualized with unparalleled 3D granularity and impact.
- INTERCONNECTED: Our live 3D model offers the most robust connectivity information available today about what you have, what it's doing, and what it's connected to. Rich, granular information about the interrelationships between assets, space, power, network ports, and network services. Connectivity is one of the toughest challenges facing today's data center managers.
- OPEN: iTRACS CPIM is an open, 100% software platform with no hardware or other proprietary constraints – we are Open to the world. We can easily integrate with your existing enterprise systems, data center vendors, and software partners so your existing investments will be fully leveraged within your DCIM deployment. Open means adding new data feeds and extending DCIM capabilities at will. Open means the fast-growing global ourDCIM™ Developer Community.
- With the ourDCIM™ community, iTRACS invites customers, partners, and integrators to collaborate on the future of DCIM and its role in data center management – a future we can drive together.

Virtualization
Clustering

Supplier
OSL Gesellschaft für offene System-lösungen mbH

Short Introduction: Company

OSL, a german software company based in Schöneiche near Berlin, has been developing data centercentric infrastructure software based on Linux and Solaris – from drivers through to user interfaces – since 2002.

In the three product lines OSL Storage Cluster, OSL RSIO and OSL Unified Virtualization Environment, OSL offers solutions from high available application clustering, virtualization right to server and storage (SAN) management. Right at the core OSL, is able to offer high performance at reasonable and competitive costs.

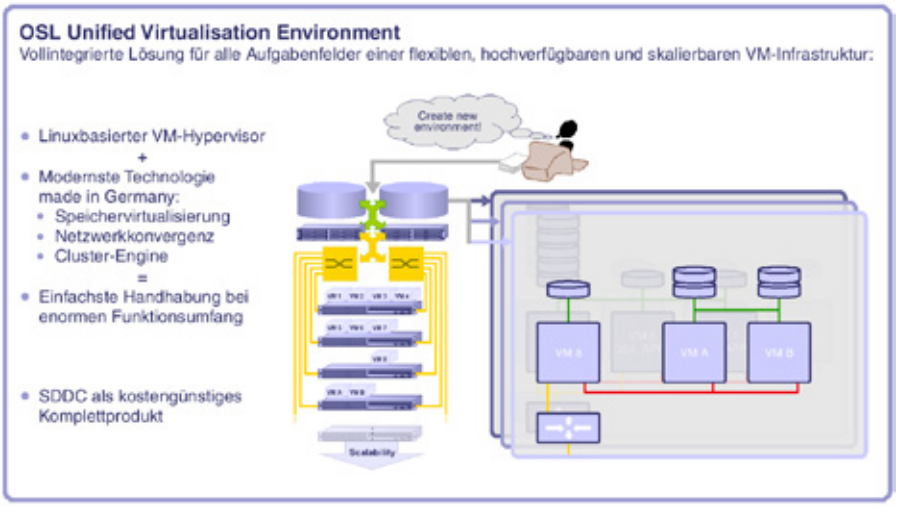
Short Introduction: DCIM solution

The OSL Unified Virtualization Environment offers a one-stop interface, to maintain Virtual Machines and their Storage Devices (SAN) as well their IP-Network (Multitenancy) from a single point of administration. OSL UVE may be laid out fully resilient, satisfying the the most sophisticated requirements and Service Level Agreements (SLA).

OSL UVE is composed of three core components. The OSL Unified Virtualisation Server, operating as the head of the solution, allowing central administration and access to storage (internal/SAN). The Unified Network, joining I/O and LAN functions. And the OSL Unified Virtualization Client, offering server virtualization on the hypervisor nodes.

Product History

Market and customer requirements which appeared in the context of projects and regular product development, led to the first steps being taken for the development of the OSL Unified Virtualisation Environment (UVE) in the year 2011. In the following two years, an innovative product has been developed, which was introduced to the broader public in early 2013. OSL UVE (Unified Virtualization Environment) was released October 2013.



Special Features of the Solution

The combination of virtualization, VM clustering and well thought-out high-availability, scaling and security functions, together with the central management, is unique on the market in this form. This solution is able to radically simplify data center design and administration, accelerating your data center processes. Along with a significant cost reduction, typical data center problems, like silo creation or holes in the network security, are minimized.

Along with the functions mentioned above, the OSL Unified Virtualization Environment convinces through the following functions:

- central and simple administration
- use of a global and flexible storage pool
- rapid provisioning with templates
- I/O bandwidth control
- data mirroring, DR capability, data mobility
- live migration, and high availability for VMsresource management for the hypervisor nodes/load balancing
- mixed clusters (Linux/Unix)

Supplier Panduit

Short Introduction: Company

Since 1955, Panduit has been a world-class developer and provider of leading-edge solutions that connect, manage and automate the physical infrastructure – helping customers integrate core business systems for a smarter, unified business foundation. Recently named a Top 10 Major Player in the DCIM space by the International Data Corporation (IDC), Panduit's SmartZone™ Solutions have been commended for advanced DCIM product features, quick and easy deployment, and strong customer satisfaction. Panduit's robust partner ecosystem, global staff, and unmatched service and support make Panduit a valuable and trusted partner. (www.panduit.com).

Short Introduction: DCIM solution

SmartZone™ Solutions help you manage your three top data center challenges – capacity, efficiency and uptime – and more! To do so, SmartZone's software, intelligent hardware and services remove any uncertainty from your decisionmaking processes with granular visibility of power, space, environmental, asset, connectivity and security information.

At the core of SmartZone™ is the ability to create a precise and logical reflection of the data center and operational analytics. These are monitored, managed, and documented in real-time, on-site or remotely – helping you complete your daily management and reporting tasks while enabling greater energy and operational efficiencies, better capacity management, and optimized resilience.

Panduit applies SmartZone™ Solutions using the unique 6 Zone™ Methodology, which segments buildings into six clearly defined "zones" with distinct operational metrics. Identify efficiency opportunities in each zone, while also benefiting from a holistic view of the entire building!

SmartZone™ customers are provided with customized packages to fit their needs;

- modular SmartZone™ software lets you view information relevant to you
- extensive range of hardware for automated granular data collection and reporting
- SmartZone™ Implementation services, and supporting Panduit services (such as CFD and Design)
- For the smaller data center – SmartZone™ Rack Energy Kits: quick and easily installed energy management DCIM solutions for 30 racks or less.

In short, SmartZone™ Solutions provide DCIM options for the full spectrum of data centers, whether large or small, legacy or new build; all can benefit from improved capacity, efficiency, and uptime – and optimized operations.

Product History

Panduit's thorough background in intelligent connectivity and asset management originally led to the development of the Physical Infrastructure Manager (PIM™) software (first release 2006) and supporting PanView IQ™ (PViQ™) hardware. This product set has since grown to include the all-important, specialised capabilities in power/energy, environmental and capacity management that provide the detailed visibility and control that is vital in today's data centers and extended enterprises.

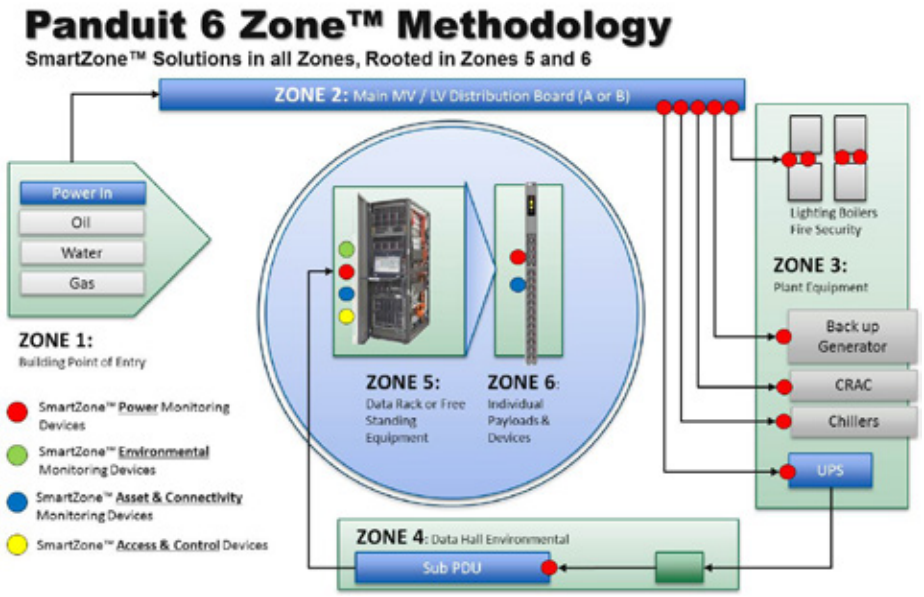
Panduit continues to grow and develop their DCIM product range to cater for the dynamic needs of their customers. The recent acquisition of SynapSense, a leading provider of wireless data center monitoring and cooling control solutions, will enhance Panduit's already extensive remote management capabilities.

Reference Projects

Zen Internet

Zen Internet used SmartZone™ Solutions aligned to a 6 Zone™ Methodology, to:

- Increase energy efficiency across all data centers, achieving a PUE of 1.6.
- Exceed annual 5% CO2 emission reduction target with an 8% reduction of energy consumption and emissions
- Improve capacity management and energy efficiencywhile making cost savings, through deployment of SmartZone PDUs, Gateways and Sensors.
- Meet customers' exact requirements with customized SmartZone™ intelligent PDUs.



Anonymous – Broadcasting company
A major multi-channel, multi-platform television service provider in Europe used SmartZone™ to:

- Reduce energy consumption in their data centers by 50%
- Achieve 20% increase in energy efficiency of broadcaster owned buildings
- Increase server virtualization from 12% to 56% reducing the need for on-site servers

Anonymous – Financial Institution
A global financial institution was facing the following challenges:

- Double-digit reductions in greenhouse gas emissions and energy efficiency programs from their real estate footprint
- Improve data center operational efficiency
- 80% of their servers were operating at 5 percent of capacity.

They:

- Met nearly 20 percent energy efficiency and environmental targets four years ahead of schedule.

Special Features of the Solution

- Built upon a cost-effective gateway architecture, SmartZone™ Solutions allow multiple rack PDUs, power meters, environmental sensors, and cabinet security access and control devices to be monitored through a single installed gateway, through one single IP address. This simplifies the network architecture, reduces the number of physical IP switch ports required, and reduces the allocation of capital IP costs and management overhead.
- Panduit's unique, logical, 6 Zone™ methodology segments local & remote buildings into six clearly defined "zones", with zones 5 & 6 (cabinet and asset) at the heart of the operation. This practiced and proven methodology assesses simplified, divided views of these distinct enterprise, data center & facility zones to holistically monitor, manage and optimize with greater visibility.

Supplier
Rackwise Inc.

Short Introduction: Company

Rackwise is a leader in software development focused solely on DCIM and offers a solution with features and functionality that assures reliability, identifies hidden capacity, and improves efficiency resulting in accelerated returns on investments through significantly optimized data centers and IT infrastructures.

Rackwise headquarters in Folsom, California, with product development and support based in Raleigh, North Carolina.

Rackwise has a worldwide network of sales and service partners.

Short Introduction: DCIM solution

Rackwise DCiM X software was designed to address the full spectrum of enterprise infrastructure and data center infrastructure management needs. Rackwise DCiM X is an enterprise-class suite of Data Center Infrastructure Management (DCIM) software that enables centraized and intelligent management of the entire enterprise's data center infrastructure environment including management and visualization of floorplans, assets, visualization of power, cooling and rack capacities, connection management, real-time monitoring, failure and what-if scenario analysis, green reporting, as well as industry-leading reporting and business analytics, and intelligent capacity planning. Rackwise DCiM X is easy-to-use, provides quick time to value and short return on investment, and helps businesses of all sizes manage and optimize their complex global enterprise infrastructures and data center environments.

Product History

Rackwise first introduced its software DCM (Data Center Manager) in 2005 to provide IT customers with a solution for managing data center physical assets within a graphical user interface. Since then, Rackwise has progressively evolved to include multiple data center management, maintenance/ lease/warranty tracking, power and cooling modeling,

advanced reporting/business analytics, failure analysis, rea-time monitoring, what-if scenarios, green reporting, capacity planning, and in-line power.

Reference Projects

Unisys Corporation, Global

Initially with 13 worldwide mega data centers, Unisys needs included visualization of physical equipment, capacity, improved ITIL, cost reporting, and other requirements for managing the IT needs of its customers. Unisys chose Rackwise after yearlong study and evaluations of all major DCIM vendors. Unisys, a customer of Rackwise since 2012, has since built innovative service offerings for Commercial, State & Local, and US Federal Government customers as managed services that leverage Rackwise.

Ross Stores, United States

Migrating data center headquarters from California to South Carolina, Ross needs included physical inventory, capacity modeling, and improved IT management of physical inventory. Ross chose Rackwise over other competing solutions and has since expanded the use of Rackwise to include management of IT and facilities at all of its distribution centers and buying offices throughout the US. Ross Stores has been a customer of Rackwise since 2012.

Telstra, Australia

Telsra needed asset management for all disparate data centers, managed service centers, and telecommunications throughout Australia for management of their equipment and managed customer equipment. This requirement included detailed asset accounting, cost analysis, power and network connectivity management, and allocations by asset to customers and business services provided. Telstra has been a Rackwise customer since 2008, and has expanded to additional facilities now with 100+ active users.

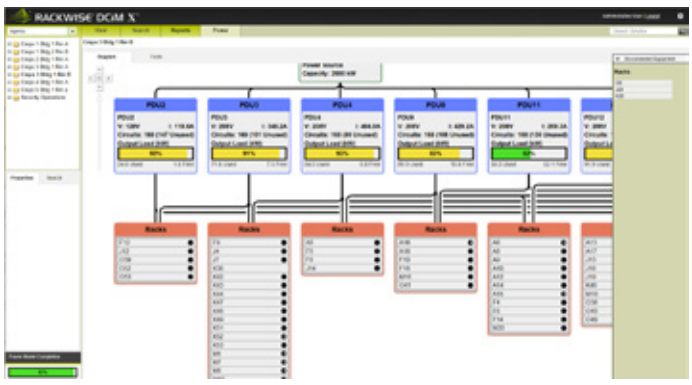
Washington Metro Area Transit Authority (WMATA), United States

WMATA needs included physical inventory for all of its data centers and network distribution framework. WMATA chose Rackwise via RFP and POC evaluation and currently manages its IT and Network architectures using Rackwise for device placement, departmental ownership, tracking of moves, adds, changes, as well as network device connectivity management and monitoring. WMATA has been a customer of Rackwise since 2010.

Special Features of the Solution

Rackwise believes we offer a compelling value and solution, superior to others in the DCIM marketplace. The following makes Rackwise uniquely special:

- Pricing based on locations and concurrent users, NOT a rack-based model. Signifiant reasons beyond cost make this superior such as unlimited scenario modeling, predictable cost, etc.
- All features are included. Maintenance ensures all new features.
- Unlimited real-time monitoring.
- Fastest time to value.
- Concurrent user license model.



Supplier Raritan Deutschland GmbH

Short Introduction: Company

Raritan is a leader in the DCIM market and a proven innovator with award-winning data center solutions.

- KVM Switches, Serial Access and Control
- Intelligent Rack PDUs, Environmental Sensors & Intelligent Asset Tags
- DCIM Software

Key Dates:

- 1985 – Founded
- 2002 – Entered Enterprise Software Business
- 2007 – Launched DCIM Software Solution

Global Offices: USA(HQ), UK, Germany, the Netherlands, Canada, Japan, Taiwan, India, Australia, France, Russia, China and Singapore

Short Introduction: DCIM solution

Raritan's DCIM Software is an award-winning, easy-to-use data center infrastructure management (DCIM) solution that provides you with real-time information about your assets, power, networks and IT equipment. It clearly visualizes your infrastructure to help data center and facilities managers manage placement of IT equipment, make informed capacity management decisions and keep accurate track of data center assets. Raritan's Software enables data center and facility managers to closely monitor and efficiently utilize their existing data center power infrastructure. Power analytics, cooling charts, and reports provide the tools to understand real-time power load, trends, and capacity at all levels of infrastructure. A configurable dashboard provides vendor agnostic views of power capacity, environmental health, and energy consumption. Raritan's smart rack concept provides one-click access to rack power, cooling, airflow, events data and much more.

Reference Projects

British Airways
http://www.raritan.com/resources/case-studies/detail/british-airways

Shands
http://www.raritan.com/resources/case-studies/detail/shands-healthcare

JR Simplot
http://www.raritan.com/resources/videos

Special Features of the Solution

Our solution is the most scalable, secure multivendor solution. We provide full power chain and network path management with full validation. It is easy to install, configure and use.

Schneider Electric

Supplier
Schneider Electric GmbH

Short Introduction: Company

As a global specialist in energy management with operations in more than 100 countries, Schneider Electric offers integrated solutions across multiple market segments, including leadership positions in Utilities & Infrastructure, Industries & Machines Manufacturers, Non-residential Building, Data Centres & Networks and in Residential. Focused on making energy safe, reliable, efficient, productive and green.

Short Introduction: DCIM solution

StruxureWare for Data Centers is a management and monitoring software suite designed to collect and manage data about a data center's assets, resource use and operation status throughout the data center lifecycle. This information is then distributed, integrated, and applied in ways that help managers optimize the data center's power usage effectiveness (PUE) and meet IT, business and service oriented goals. From IT assets to racks, rows, rooms and buildings, StruxureWare for Data Centers delivers the right information to the right users at the right time.

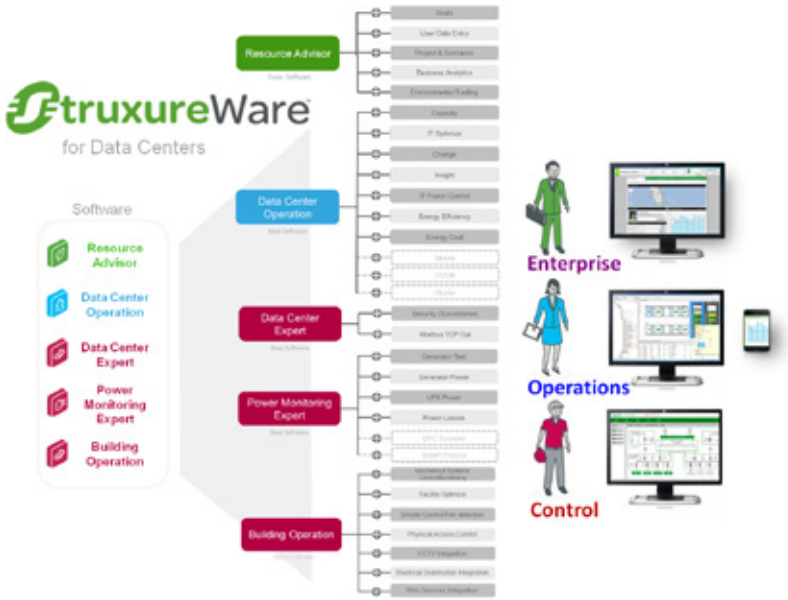
Product History

StruxureWare for Data Centers is in operation since years. The solutions Infrastruxure Central, Andover Continuum/TAC Vista and ION Enterprise were joined to StruxureWare for Data Centers in the beginning of 2013. Continuous improvements and new added functionality has been implemented since this time.

Reference Projects

- Wortmann
- Novartis
- UbiSoft
- Capgemini

Description/further information on request.



speedikon FM
Aktiengesellschaft

Special Features of the Solution

StruxureWare for Data Centers provides a truly open, modular, fully scalable & integrated DCIM with a holistic & intelligent view of the facility & IT operation. This include specialized apps for enhanced monitoring & management support for operators, e.g. power capping capabilities for control of server power for IT management & integrations. The StruxureWare Portal gives visibility to business & DC key performance indicators KPIs with customizable views across the various stakeholders.

Supplier speedikon Facility Management AG

Short Introduction: Company

Since 1997 speedikon Facility Management AG has been developing and implementing innovative IT solutions for the administration of property and equipment. The Client-Server based solution *speedikon*® FM, the associated web-based component *speedikon*® SP and the new, completely web-based solution *speedikon*® C have been implemented in more than 2000 successful projects by more than 700 customers. In addition, with *speedikon*® DAMS, a solution is offered with which data centers can be efficiently administered.

Short Introduction: DCIM solution

speedikon® DAMS is a browser-based DCIM solution for the administration of data centers. Besides assets and cables, energy data can be visualized, as well. Resource planning and a range of workflows complete the system. Because *speedikon*® DAMS has been employed for the last 12 years in large and small data centers, many requirements have been realized in practice. Through constant contact with our customers, their requirements will continue to influence further development.

Product History

speedikon® DAMS was developed 12 years ago for one of the largest ERP companies in the world. Ever since, the application has been continually further developed and currently several 100,000 m² are managed by *speedikon*® DAMS. For the past two years, the energy data management software from the sister company WiriTec GmbH has been integrated.

Reference Projects

"Customer 1"
One of the largest German ERP companies in the world

"Customer 2"
One of the largest HW und SW companies in the world

"Customer 3"
Many public clients like workers unions, IT service providers and utility companies

"Customer 4"
A large European clothing company from South Germany.

Special Features of the Solution

Through excellent value for money and with minimal training required, as well as through the intuitive user interface, an ROI is very quickly realized.

speedikon® DAMS is growing steadily in Germany and Europe. In just the last 6 months, further decisive large projects could be completed, such as for a large German airport, a German airline, a well-known South German agricultural company, renowned IT service providers, a major French city and for one of the largest IT companies in Spain.

TKM Gruppe
www.tkm-gmbh.de

FUTURE-PATCH®

Supplier TKM – Telekommunikation und Elektronik GmbH

Short Introduction: Company

Since the establishment of the company in 1986, the internationally aligned TKM GmbH has been focusing on intelligent networks in the application areas of "structured cabling", such as enterprise, data centers, industry and also connectivity for carrier networks.

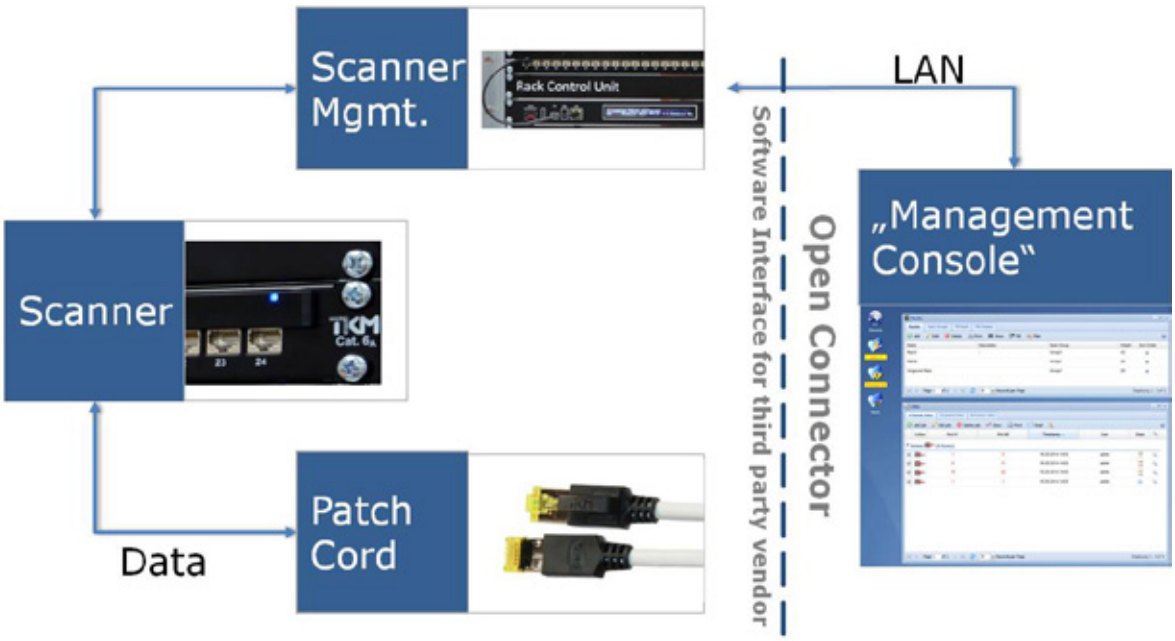
Short Introduction: DCIM solution

What can FUTURE-PATCH do?

The AIM system FUTURE-PATCH is an RFID-based patch cable management system which documents the IT infrastructure and cable structure automatically in real-time – in a logical and comprehensive way: Through the use of RFID transponders (Radio Frequency Identification), every cable can be clearly allocated and documented electronically. At every port there is a reader-antenna, which immediately detects and relays a change in the connection. In the other direction, the correct patching can be assigned. The LEDs placed on the ports allow an optical display, which makes the implementation of the routing straight forward.

FUTURE-PATCH monitors ports on servers and switches, as well as the copper and fiber optic connections.

In large networks, a return on investment can be achieved after 1 – 2 years, after which "you're saving money".



Please note:
The FUTURE-PATCH system is in principle also available as a pure OEM version. This can be developed into a pure "brand label" version with little adaptation, or right through to a customer-individual RFID electronic development, which is designed exclusively for the monitoring of customer panels.

Product History

History in brief:

- closed system from HW and SW (2008)
- Development and patenting of a special RFID sensor cord function for data ports on servers
- Creation of middleware as interface for other SW providers, with a special focus on entire DCIM tools (2011)
- Creation of an OEM concept (2012)
- Expansion of functions in future generations: Integration of PDUs into RFID monitoring, integration of sensors (temp. & humidity), online services, e.g. for patch cables

Reference Projects

Reutlingen City Administration, Germany

The city administration had a new network infrastructure installed in 2008. Around 4800 ports were operated in more than 17 data center spaces located in 3 buildings. Those responsible for IT for the city decided in 2008 to install an automatic patch cable management system (PMS) in addition. The patch task management was to be simplified for staff relocations, and switched or disconnected patches promptly documented. www.future-patch.de/index.php?id=80

Volkswagen Commercial Vehicles, Germany

The aim of Volkswagen Commercial Vehicles in Hannover was the optimisation of their IT processes in the production area. For this, among other activities, an automatic patch cable management system was to be installed, with the help of which the documentation of patch connections could be efficiently and promptly undertaken. www.future-patch.de/index.php?id=81

Customer 1 – data center in Berlin, Germany

Year of Implementation: 2010
Type of Network: Data Center
QTY – Ports/Locations: 14.000/1

Customer 2 – 2 data centers in Abu Dhabi, United Arab Emirates

Year of Implementation: Q2/2013
Type of Network: Data Center
QTY – Ports/Locations: 25.000/2

Special Features of the Solution

Why is FUTURE-PATCH innovative?
With this system it is possible to document not only the passive components, but also the active servers and switches in real-time over a sensor cable, providing an entire solution for data centers. So far this is unique amongst all of the established systems on the market!

FUTURE-PATCH is a 100 percent in-house development, which has been carried out 100 percent at the location in Mönchengladbach for more than 7 years.

Supplier tripunkt GmbH

Short Introduction: Company

Tripunkt GmbH has been developing and selling the award-winning network information system Pathfinder since 2006. Renowned customers use Pathfinder and Pathfinder Mobile for the visualization and analysis of data centers and ICT networks. tripunkt GmbH is owner-operated, and manufacturer-neutral and they have their headquarters in Berlin (founded: 2001).

Short Introduction: DCIM solution

Pathfinder allows the comprehensive documentation of the complete infrastructure in data centers. This includes the administration, based on a data base and manufacturer-neutral, of all activities, along with passive equipment such as switch cabinets, routers, and switches. As an intuitive software for DCI Management, Pathfinder also supports administrators and those responsible for IT in central topics like connectivity, IPAM and cabling.

Most recently, Pathfinder Mobile (Android) now supplements the existing desktop solution and allows data center management to be undertaken directly on location. Through Pathfinder Mobile, users gain location-independent offline access to all important information. The system is available as both a single-workspace version and a network solution and can be expanded through 4 modules if required. Pathfinder is implementable regardless of the structure or size of the data center.

Product History

2006 – Beginning development of a documentation system for ICT networks
2007 – first customers, like Univ. Erlangen, Zwickau City Administration
2013 – Best of Initiative Mittelstand
2013 – more than 80 customers from the German-speaking region
2014 – Best of Initiative Mittelstand
2014 – Pathfinder Mobile Launch as App (Android)
2014 – Multi-lingual Version, first international customers

Reference Projects

FEV GmbH, Germany

FEV GmbH is a leading service provider in the construction and development of conventional and alternative propulsion. Using Pathfinder, the cabling of the complete production premises was documented, including all measuring stations and test consoles and research facilities as well as the administration. Pathfinder supports administrators in the construction of data centers, the analysis of capacities and in the removal of disturbances in the network.

Lecos GmbH, Germany

Lecos is the IT service provider for the City of Leipzig. The project included the transferal of inventory data from an outdated management system. In the meantime, administration establishments, schools and libraries in the City of Leipzig are documented using Pathfinder.

Friedrich Alexander University of Erlangen-Nuremberg, Germany

The University of Erlangen has at its disposal a complex and highly-developed fiber-optic backbone. 350 buildings are administered. Using Pathfinder the primary network was determined, and administrators were given the possibility of a graphic analysis of the network. Capacities can be calculated, and the construction of new pathways can be planned.

City Council of Zwickau, Germany

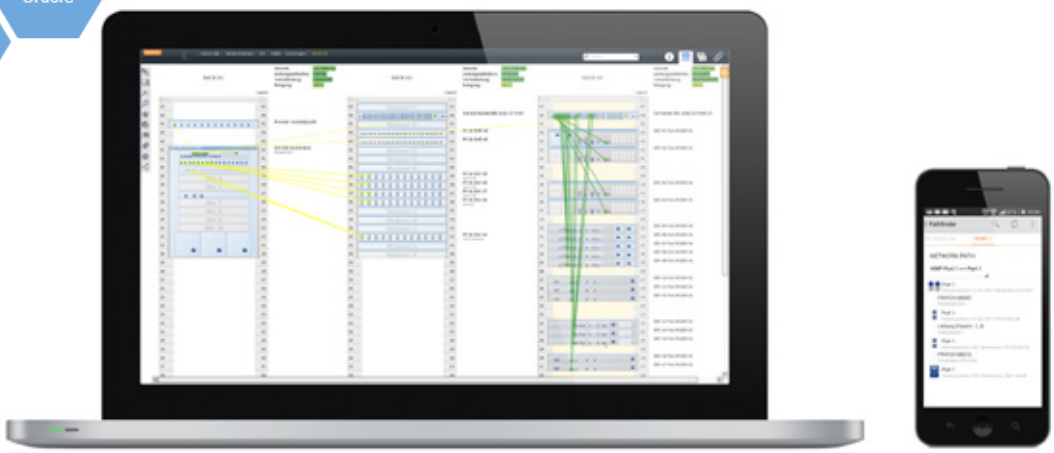
Migration of the network documentation out of an inventory system which was to be replaced. The complete city cabling, including the administration establishments, was documented.

Special Features of the Solution

Pathfinder is very easy to learn, intuitive and uncomplicated. Many modern user-concepts, like assistants, dashboards, data visualization and preparation, as well as Drag&Drop, support the administrator with the work.

The desktop-solution is now supplemented by a mobile version. With the Pathfinder Mobile App (Android), completely new forms of DCI Management have become possible, as users gain access to all important information about the data center location-independently.

Pathfinder and Modules



Product Features

In the following three tables, we have collated

- the product features,
- an overview of modules,
- detailed descriptions of the modules, and
- information on future planning

We did not provide a definition of the term "module"; the provider's interpretation can be found in the "detailed description". If a solution provides additional services, these can be found under the heading "Further".

Company	Which assets/resources can be managed?	How are the assets/resources imported into the system?
ABB	All Mechanical, Electrical and IT equipment, devices and systems.	■ Manually, ■ individually, ■ Bulk Import or ■ Real-time data feed integration.
AixpertSoft GmbH	In principle, all kinds of assets and resources.	The pre-defined product library provides basic products (incl. slots, ports, icons...), which can easily be combined to sophisticated configurations, so-called "templates" (distribution cabinet systems incl. all components contained, servers with virtual instances, storage with built-in hard drives, networks incl. reservation pools, service catalogs,....). In addition, these instances can simply be generated based on .csv. sources or by "simple loader" (Integration Engine light). Some customers also make use of data from peripheral systems (such as discovery, data bases, software systems from network, storage or equipment manufacturers) to create AixBOMS objects.
AT+C EDV GmbH	No limit	■ Auto-Discovery, ■ import from lists, ■ barcode ■ RFID.
CA Technologies	Any Facilities and IT Devices within and around the Data Center. If a device type doesn't exist, the user can create it.	■ manually, ■ Excel file or ■ Autodiscovery (SNMP)
COFELY Deutschland GmbH	The system was primarily developed for building automation for cooling, electrical and other technical building systems. Using subsystems, and web-based and communicative integration, almost all assets/resources can be administered from a central operating surface.	Program components
Cormant, Inc.	Any due to powerful configuration ability, including over 5,000 templates that are already supplied with the solution.	■ Imports from CSV/XLS ■ Network discovery ■ Manual data entry ■ Mass (multiple at once) data entry ■ On mobile devices while standing in front of the asset/equipment/connection ■ From work-flow ■ From audits (using barcodes or RFID) ■ Using the Open API
DataCenterVision S.A.	All physical and logical assets / resources for Datacenter from IT (server, vm, racks, storage, network, cable, etc...) to facility and power management (cooling, pdu's, sensor devices, etc...)	■ scanning of the network, ■ importing existing files / inventories, ■ manual creation or ■ combination of the 3.
Emerson Network Power	All physical elements of the IT and facility infrastructure which are to be found in the Device Library. The Device Library can be extended anytime.	Assets (IT and Facility) can either be ported over via csv file or manual input through UI. In additon there is the possibility to use API.
FieldView Solutions	FieldView communicates with just about any other piece of equipment in your data center, Facilities and IT Equipment.	■ Automated and/or ■ manual or ■ extracted from various other systems, ■ both one-time imports and continuous updates

How is the inventory taken?	Library of equipment from well-known producers				How can multipe sites be managed?
	is offered	is expanded on customer request	can be expanded by customer	further	
■ Manually, ■ individually, ■ Bulk Import or ■ Real-time data feed integration.	x	x	x	A "living" library with 4 planned releases p.a., can be integrated into the core-platform.	Decathlon is easily capable of supporting multiple sites, regardless of age, design, location, style and brings together all Mechanical, Electrical and IT performance data into a single operating environment. Sites can be administred remotely, locally or centrally providing flexibility in operational efficiencies and operational processes.
In the "project reality", as a rule this will be accomplished by a mix of "updating through peripheral systems" (discovery or interfaces delivering data automatically), "updating through ITSM processes" (the customer implements a comprehensive change, incident, problem,...management system) and "manual updating via AixBOMS user interfaces" (workflows, assistants, loaders, workbenches, web browsers, masks, graphics editors, in future also mobile devices).	x	x	x	Can also be loaded (template loader).	"Location" is a data object in its own right (organized by country, city, site, building, floor, room, area). As many "Area Plans" as required can be generated for any of the object levels (if required, multiple different installation spaces on one floor in one location). "Area Plans" then contain (up to nine) layers for the display and visualization of information (architectural plans, grid-layer, equipment layer, cables and routes, power and climate control, info layer,....). The underlying consistent object orientation then enables specific queries (analyses) per location, area plan, space, grid, component, etc....
barcode or RFID stock-taking, Inventory Module	x	x	x		Logically separated or together.
■ excel import, ■ manually, ■ auto-discovery or ■ RFID	x	x	x		There is no limit to the number of premises that can be administered. This is also multi-tennanted via an indept security layout: based on user groups (can be integrated with LDAP), location, devices groups or at the device level.
	x	x	x		Using Program component.
Using the mobile component of Cormant-CS. Audits, mass entry and changes can all be managed from mobile devices. Support for barcodes (any) and RFID tags also make inventory management much simpler. Device query/discovery is also supported to alert when new devices are seen on the network.	x	x	x		Multiple premises are administered by adding additional nodes to the visual structure in Cormant-CS. This could be by region/country/site/other. The system can provide different security for each premise while sharing the central libraries in the system.
DataCenterVision is a relational database, a client/server architecture. We have one table par kind of device: racks, servers, VMs, switches, etc.	x	x	x		Easily in one single database (N data centers per database), or sepa-rately (1 data center per database). Interconnection between 2 data-centers can also be managed.
■ Import through csv, ■ through Mobile device, and ■ manual input through UI via API	x	x			All premises can be monitorerd through a single UI.
Extracted from third party system, CMDB or third party auto discovery.	x	x	x	Is offered per customer.	This is one of FieldView's strengths. Centralized data base through which the world's biggest data center operators manage hundreds of data centers world wide in real time. No other solution can handle as many locations and points, up to 38 million, polling 12 times a minute. For large locations, a local virtual polling server collects and compresses data and sends to a central repository.

Company	Which assets/resources can be managed?	How are the assets/resources imported into the system?
FNT GmbH	All physical and logical assets/ressources concerning IT and Data Center Infrastructure Management or Network and Telecommunication Inventory Management.	There are serveral possibilities for manual input of single assets and ressources, as well as their relations. Mass data import using Excel sheets is standard functionality. In addition, an import/export enginge is available (FNT Staging Area) which is designed for single and mass data input from various sources in many different formats. Futhermore, webservices (API) and direct data base links are available.
IMS GmbH	No limitations, because, through the flexible IMSWARE data modelling, any Assets/Resources can be administered. The expansion of the data model can be undertaken on the customer-side	Assets/Resources can be installed in several ways: Automated e.g. over Regelwerke or through interfaces Generation function (e.g. copying of complete Verteilern) Entry in object management
iTRACS, a CommScope Company	Anything and everything associated with physical infrastructure. All physical resources are seen, managed, and optimized in a single holistic management environment: IT Assets (servers, switches, SANs, etc.); Facilities Assets (PDUs, CRACS, etc.); Power Connectiv-ity (the entire power chain from utility on the street down to every port on every device); Network Connectivity (all end-to-end connectivity from structured cabling to patching of very port on every device); Space (entire physical footprint in a navigable 3D model providing spatial dimensions and context); Environmentals and Cooling – hot spots, thermals, etc. All of this is seen, understood, and managed in the world's first and only 3D model featuring Interactive 3D Visualization – The Efficiency Engine™.	Auto-discovery features and auto-assimilation tools are baked into iTRACS. We can pull data from anywhere – CAD drawings, spreadsheets, integration with third-party DBs, flat files, etc. iTRACS can quickly assimilate information from multiple sources and populate its database for 100% comprehensiveness and accuracy. Our new integration with imVision provides unparalleled real-time visibility and managemnent over the complex web of network ports, patches, and panels. The imVision connectivity database automatically flows into CPIM – seamlessly. No manual input is required. You just build the connectivity database and it's seamlessly flowed into CPIM. The software does the rest.
OSL Gesellschaft für offene Systemlösungen mbH	The following components in the data center infrastructure can be administered using the OSL Unified Virtualisation Environment: ■ Storage ■ Networks ■ Servers (VMs)	■ Command Line Interface (CLI), ■ curses menu system (pseudo-graphic user interface) and ■ in the future using a browser-based surface.
Panduit	SmartZone™ software provides a structured and logical graphical representation of all physical infrastructure elements, virtual machines/hosts, and supporting network infrastructure, combined with highly accurate, granular data gathered by SmartZoneTM or third party hardware to ensure your logical management matches the physical requirements. Mapping the physical infrastructure in this way helps you keep an eye on (and keep control of) every aspect of your data center – power and energy, environmental characteristics, assets, connectivity, capacity, and physical security – for total peace of mind.	■ Manually ■ Import functionality to import device data ■ Automatic device discovery (‚plug & play' type) See 'How Is The Inventory Taken' for further detail.
Rackwise Inc.	Rackwise DCiM X software allows facility and IT engineers to manage, model, and measure all equipment from UPS, PDU, CRAC and other facilities equipment down to racks, patch-panels, servers, switches, as well as subcomponents including blade cards, fans, power-supplies, network interface cards, modules, and submodule connectors. This includes associating businesss relationships such as department, customer, and business service provided by each and every component and subcomponent. Additionally, logical devices including virtual machine and related allocations, software relationships between OS and Applications, and unlimited customer-assigned properties can be administered within Rackwise DCiM X.	Rackwise DCiM X provides several means for inputting data into the system including auto discovery, integration with existing asset systems, Rackwise SmartClient Excel import/export interface, Rackwise SmartClient Visio interface, or via the web brower.
Raritan Deutschland GmbH	All classes of Data Center IT Assets suchs as blades, servers, net-work devcies, all classes of Data Center physical infrastructure such as UPS, Floor PDU and Rack PDU and all class of the network and power path.	autodiscovered, bulk import via excel, via GUI input and via system to system flow via software connectors.

How is the inventory taken?	Library of equipment from well-known producers				How can multipe sites be managed?
	is offered	is expanded on customer request	can be expanded by customer	further	
The Inventory Management section handles the inventory and warehouse management topics providing a standard workflow for the inventory. The master data for the objects is created first and inventory numbers reserved. After delivery, the devices are stored in the database. The warehouse management offers managing of arbitrary storage locations where access rights and business processes can be defined separately for each warehouse. The stocked objects can, however, also be elements which were previously entered into inventory. Integrated reports provide information about the stock. Addtionally threshold values for the order can be specified. An interface to SAP or other commercial software packages, as well as the use of barcode readers, has been implemented several times in projects.	X	X	X		FNT Command offers DCIM for an unlimited number of zones/locations/racks; an unlimited number of tenants is supported at no extra cost.
IMSWARE makes all processes available, from the application through to operation of the component/object. For this, there are also Barcode/RFID solutions available for taking the inventory.	X	X	X		Through the IMSWARE client capability any locations can be administered, also independently of one another. Access to all locations is possible at any time with corresponding rights.
■ Bulk Import ■ Manually ■ Auto Discovery ■ Real-Time Data Feed Integration ■ Physical inventory audits ■ Large model library, updated continuously	X	X	X	X	Unlimited number of sites can be managed under a single iTRACS management instance – one holistic system and database. A choice of three interfaces can be used within this environment to manage complex data center portfolios no matter how many sites or where they're located – Web Browser, iPad (convenient Mobile app), and Windows Client for today's power users.
Existing hardware, such as LAN switches, nodes and hard drives, can, after examination and approval, be further used in an OSL UVE installation. Replacement of components can be undertaken during running operation, as long as the installation is fully or partly redundant.	-	-	-		In every OSL UVE installation, there is a single point of administration (UVS). Switches and nodes (UVC) can be distributed over several locations, and then be centrally administered. If OSL UVE is installed as an independent solution in several loca-tions, then each location must be separately administered.
Discovery (automatic, or ‚pluggable' and triggered), Data import, manual input. The flexible discovery architecture provides a real time representation of the network and connected devices, and prevents any proliferation of outdated information. Includes support for SNMP and non-SNMP protocols. The strength of SmartZone™ auto-discovery capability has been praised as a leading capability in its category when compared with other discovery methods on the market.	X	X	X		Within SmartZone™ software, a World Map shows all global locations, and each location shows different floors, rooms, racks, devices, AND connections. A flexible Location Tree structure allows you to customize your topologies and use multi-select options to quickly and easily identify asset and connectivity geographic locations. You can add multiple locations with one network in a single databank, or manage locations separately by using multiple isolated databanks. Remote access features allow global network access via any web-browser application, as well as centralized management of remote sites.
Inventory can be taken via auto-discovery, physical inventory audits, or gap analysis between physical inventory and that which is present within the system. Once inventory is loaded into the system, reports within Rackwise DCiM X provide inventory by manufacturer, by IP, by customer, by application, by virtual machine in addition to several other reports.	X	X	X	Rackwise provides the ability to override any equipment shape in the library (currently 500 manufacturers, 32,000+ equipment) via static overrides beyond manufacturer nameplate specifications including enterprise derate, instance override, and equipment class override. Rackwise also provides a robust collection of generic equipment with full override capabilities as described abive. This provides customers with unprecedented ability and control to model their unique equipment, should it not be already in our library, with substitute or generic equipment using their own specifications. Additionally, every device can have real-time monitors configured for actual versus modeled capacity.	Rackwise DCiM X is a centralize system that enables enterprises with multiple premises to manage all environments within a single system. Users log into the system with their user-id and are then presented with the facilities for which they are responsible based on their role-based access defined within the system. This enables enterprises to manage equipment and capacity in many locations without requiring physical access the facility.
Autodiscovered, bulk import via excel, via GUI input and via system to system flow via software connectors. 30,000 item models, library updated monthly.	X	X	X		We have a highly scalable secure two tier architecture. Our data collection and monitoring module is deployed on each premise and our DCIM solution consolidateds in to one screen.

Company	Which assets/resources can be managed?	How are the assets/resources imported into the system?	
Schneider Electric GmbH	All physical devices as long they have some kind of possible connection like network connectivity or dry contacts.	■ auto discovery ■ manual input ■ import ■ integration via API's	
speedikon Facility Management AG	All assets available in the data center, such as infrastructure objects, energy data as well as commercial data can be administered.	Graphic dialog or import of ASCII or DWG data.	
TKM – Telekommunikation und Elektronik GmbH	Current version: ■ Physical Data Port Monitoring – Change Management ■ Real-time Patchführung ■ Online Dokumentation Next generation: ■ Physical Power Cord Monitoring ■ Sensor-Information für Cooling Systeme		
tripunkt GmbH	Pathfinder allows the comprehensive documentation and administration of the complete infrastructure in data centers.	An online catalog with approx. 4,000 pieces of equipment is available for users to download free-of-charge. Assets/resources are placed using Drag&Drop, or installed using assistants. Pathfinder also offers convenient import functions, to import asset lists from external systems. New equipment can be requested from Support. The representation of freely-definable equipment is also possible.	

Module Overview

Company	Product Features																		
	Asset Management	Connectivity Management	Resource Management	Power Management	Inventory Management with Contract and License Management	Planning Management	Task Management	Change Management	Workflow Management	own integrated workflow engine	Workflow Engine from an external provider can be embedded	Busines Intelligence	own integrated BI solution	BI solution from an external provider can be embedded	Administration of Investment in Equipment	Dashboard-, Report- and Print Management	own integrated solution	Tools from an external provider can be embedded	further	
ABB	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
AixpertSoft GmbH	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	
AT+C EDV GmbH	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	

	How is the inventory taken?	Library of equipment from well-known producers				How can multipe sites be managed?
		is offered	is expanded on customer request	can be expanded by customer	further	
	■ auto discovery ■ manual input ■ import	X	X	X		all premises can be monitored and administred from a single location via cluster and nodes.
	Via dialog or automatically through workflow	X	X	X		Any number of locations can be administered.
	Maintenance of all physical moves, adds and changes (MAC) are monitored automatically in real-time via RFID scanner.	X	X			Locations, like all components to be administered, are documented in a data base, e.g. maintained in lists or imported into a comprehensive tree structure.
	Inventorization and de-inventorization is undertaken manually by the user. In addition, the system offers plausibility checks, in order to compare the actual status of the documentation with the status of the data center. Importation of inventory data from existing inventory systems is possible using a csv or SQL interface.	X	X	X	New equipment is generated in the context of product maintenance, and made available to all customers free-of-charge.	The administration of multiple locations and the representation of the cabling across all locations is part of the core functionality.

	The system is built on modules and can be successively introduced	Following modules can be used separately	Do you provide customer defaults for the individual modules?	The next steps planned
	Yes	■ Facility, ■ Power, ■ Energy, ■ Capacity, ■ Asset & Financial Management Systems	Yes Facility, Power and Energy are included in the base platform	The R & D roadmap is fixed for the next 2 years with regularly scheduled releases based on ABB's strategy "Industry 4.0".
	Yes	All	Yes, the modules are developed as "out of the box" solutions – developed for immediate use. In addition, a comprehensive "Tutorial DB" (example database) is supplied, which, with a dataset of more than 100,000 elements, represents nearly all established examples and technologies).	The forthcoming service packs (SP8 in 2014, SP9 in 2015) contain module enhancements for Storage (Fabric, Director, SAN, NAS,...), Connectivity (expansion for relocation und cross-exchange), Networking (SDN, customer-specific network administration and additional provider functionality), new dashboards and graphical editors. In the DCIM environment, "active (=manageable) power strips", redundant and customer-specific relations between power elements, phase-accurate and redundant (L1,L2,L3) impact management and serial connections of fuses integrated into power in- and outlets. AixBOMS 10 is planned for 2015/2016, and will contain 3-D modeling for graphics, the new client type "mobile device" (tablet, smart phone) and a system layer for further plausibility checks and company policies ("intelligent AixBOMS server").
	Yes	Maintenance and Repair SPM.7	Yes	Not specified.

Company	Product Features																		
	Asset Management	Connectivity Management	Resource Management	Power Management	Inventory Management with Contract and License Management	Planning Management	Task Management	Change Management	Workflow Management	own integrated workflow engine	Workflow Engine from an external provider can be embedded	Busines Intelligence	own integrated BI solution	BI solution from an external provider can be embedded	Administration of Investment in Equipment	Dashboard-, Report- and Print Management	own integrated solution	Tools from an external provider can be embedded	further	
CA Technologies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes*1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	
COFELY Deutschland GmbH	Yes*5	Yes*5	Yes*5	Yes*5	Yes*5	Yes*5	Yes*5	Yes*5	Yes*5	n/a	n/a	Yes*5	n/a	n/a	Yes*5	Yes*5	n/a	n/a	Yes*5	
Cormant, Inc.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	
DataCenterVision S.A.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes*2	Yes	
Emerson Network Power	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	
FieldView Solutions	Yes	Yes	Yes	Yes		Yes			Yes	No	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	
FNT GmbH	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes*3	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	
IMS GmbH	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	
iTRACS, a CommScope Company	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
OSL Gesellschaft für offene Systemlösungen mbH																			Yes	
Panduit	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	

	The system is built on modules and can be successively introduced	Following modules can be used separately	Do you provide customer defaults for the individual modules?	The next steps planned
	Yes	CA DCIM is a commercial off the shelf product. The 2 principle modules, Real-time and Asset management can be sucessively introduced.	Yes, for example templates for many devices.	Not specified.
	Yes	All subsystems.	Yes	Further implementation of customer ICT management solutions.
	Yes/No	All	Yes	Not specified.
	Real-time monitoring of power & temperature on servers can be an option.	We have three parts: ■ database admin (rights & profiles), ■ manufacturers' catalog, ■ main software application	Yes	We have an on-going product roadmap. All customers have the same product, but we listen carefully to all needs & expectations.
	Yes Modules include Inventory and Change Management, Site and Energy Management, Power System Manager, Process Manager, and Mobile.	The application is built on a foundation that can either start from the IT side or the facility side of the data center. Inventory/Change can operate as a standalone module as well as Site/Energy. From these, additional modules can be added based on needs of the data center i.e.workflow, power tracking, mobile management, etc.	No. All modules require the same defaults.	The *Trellis*™ platform has ongoing feature enhancement and continues to develop as the needs of the market changes. Both major and minor releases are scheduled on an annual basis with new modules (e.g. Thermal System Manager) being added as well as enhancements to existing capabilities.
	Complete system. However customers can choose features to implement.		Yes	Not specified.
	FNT Command® is based on different modules (system components) which can be purchased/licensed separately and refer to different functionality or aspects of usage. Modules can be introduced successively.	All offered modules that are not part of the base offering (C base/C line) can be used/purchased seperately.	Yes	Not specified.
	Yes	Minimum requirement is the basic system; all further modules/Facheschalen/interfaces/etc. can be used separately.	Yes, for IMSWARE there is a comprehensive standard data model available.	Not specified.
	Yes – our Licensing Model is flexible enough to align to whatever customer needs. We have a modular approach with 3 options – "CPIM IT" (assets and connectivity), "CPIM Facilities" (power and facilities), or the entire "CPIM Suite." Customers can choose how they want to enter the DCIM journey and then expand in any direction they'd like. The choice is theirs, depending on their short-term needs, budgets, and long-term goals. The CPIM platform is flexible enough to allow them to tailor how they want to deploy and grow the solution within their environment.	Any and all – totally up to the customer and how they'd like to deploy and grow the solution.	Yes	Not specified.
	A modular construction of OSL UVE is possible, and so designed. Switches, nodes and storage can be expanded online, without problems.	The modules cannot be used separately.	Templates for VMs can be provided on customer request. The cus-tomer can also create these templates personally.	The OSL Unified Virtualisation Environment is being continually further developed. The next expansion will provide partners and users with a browser-based surface for the programming of OSL UVE.
	Yes. The entire set of modules provide the rounded functionality required to carry out the various differing tasks and analyses associated with DCIM, but Panduit believes in providing the customer specifically with what they need so they can carry out their required functions quickly and easily, without sifting through functionality that is not relevant to them. Not all cooling, power, asset, connectivity and capacity management features may be necessary for all users! Modules can easily be added on to match customer requirements. Panduit's expertise and product set within the data center space also allows for the provisioning of other products and services in addition to SmartZone™, if so required.	The software's modular setup allows you to choose to include connectivity, asset, power and environmental, and security functionality in your configuration.	Yes. Within the device catalogue, device information is given (e.g. name-plate info). Administrator level settings for each module are provided.	Panduit provides intelligent DCIM through real-time, accurate data collection and analysis using intelligent hardware and software, and we believe that further automation of data center operations, monitoring & management is the way to reach the optimal data center state - our recent acquisition of SynapSense is in support of this vision. A lack of granular information, and differences between the virtual representation of the data center and the real thing, lead to uninformed operational choices which cause inefficiency. Thorough instrumentation of the data center using SmartZoneTM hardware allows for detailed data collection and monitoring of critical physical parameters, which prevents the virtual model diverging from the data center's real state. Panduit will be expanding upon our current automation capabilities to ensure perfect reconciliation between the logical model and the real life physical data center.

Company	Product Features																		
	Asset Management	Connectivity Management	Resource Management	Power Management	Inventory Management with Contract and License Management	Planning Management	Task Management	Change Management	Workflow Management	own integrated workflow engine	Workflow Engine from an external provider can be embedded	Busines Intelligence	own integrated BI solution	BI solution from an external provider can be embedded	Administration of Investment in Equipment	Dashboard-, Report- and Print Management	own integrated solution	Tools from an external provider can be embedded	further
Rackwise Inc.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes*4	Yes	Yes
Raritan Deutschland GmbH	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No
Schneider Electric GmbH	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
speedikon Facility Management AG	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
TKM – Telekommunikation und Elektronik GmbH	Yes	Yes	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No
tripunkt GmbH	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	No	Yes

*1 CA Process Automation is seamlessly integrated.
*2 Our data model is open & documented. We run on a SQL engine. So any reporting tool can freely address our data repository.
*3 On customers request special workflows can be created.
*4 All Rackwise DCiM X reports are easily customized by customers using existing reports as templates, and may include reporting on any custom property (unlimited) that a customer may add to the system. Report delivery may be automated via subscriptions which send reports to users email as PDF (standard), but other formats incuding word, excel, rtf and others are included and supported.
*5 Using Subsystems.

	The system is built on modules and can be successively introduced	Following modules can be used separately	Do you provide customer defaults for the individual modules?	The next steps planned
	Generally, No. Rackwise's market position is to include ALL product capabilities to all customers, thus we do not offer a stripped down version of our product. Rackwise belives that DCIM software should provide all capabilities within their means to address the breadth of DCIM requirements.	None, as all features are included within Rackwise DCiM X.	Yes. Rackwise is a comprehensive platform where all product feature components are included.	Rackwise continually innovates Rackwise DCiM X to include features and capabilities desired most by customers and industry. The Rackwise Innovations Roadmap includes the following: ■ Device and Rack-level alarming on exceeding threshold tolerances. ■ Multi-tenancy for greater granular user-level control down to equipment, power, cooling, rack and rack unit level device management. This is designed to allow service providers with the ability to manage power, cooling, and floorspace, whereas their customers can manage inventory within their allocated space. ■ Support for mobile devices to allow users to perform rack audits and moves, adds, changes from within their smartdevice (where security policy allows). ■ Utility that allows customers to create equipment shapes for their use and submission for inclusion in Rackwise's standard equipment library benefitting all customers. ■ Mobile user interface extended to smartphones.
	Yes	DCIM Monitoring (Realtime Data and Health Monitoring) and DCIM Operations (Asset and Change).		Not specified.
	StruxureWare Data Center Operation forms the base layer of soft-ware, which other modules and enhancements options can be added onto. This modules can be added in accordance to the customer needs, StruxureWare for Data Centers offers different licensing models in order to meet the different business requirements and preferences in terms of funding management software.	Need to purchase the base module and from there it can be all others modules purchased.	Yes, depending on the customer needs that can be splitted in 3 main segments, from Enterprise Energy and Sustainability to Data Center Businsess Process and Data Center Monitoring and Control.StruxureWare for Data Centers offers different licensing models in order to meet the different business requirements and preferences in terms of funding management software. It could also be seperated from a CXO level to IT and Facility level.	Continuous development to adress the customer needs.
	Yes	Asset and Energy Management can be used separately. The other modules are built on the basis of the Asset Management Module.	Yes	*speedikon*® DAMS is being continually further developed according to its roadmap. All further functions will be agreed upon with customers, especially with the *speedikon*® DAMS User Group. Requirements for further development come almost exclusively from our various customers.
	The entire system is splitted into a hardware electronic for monitorig purpose and a software frontend. Between these two major components TKM implemented a software interface which is published to third party vendors. The monitoring electronic could be connected to other software front ends (third party vendors) with the help of the interface.	Software Tool: PatchDoc for pure cable documentation. Complete system comprised of PatchDoc software and FUTURE-PATCH RFID hardware.	Yes, but most of the time a initial operation of a new network is always individual.	Not specified.
	The basic version can be expanded with new modules at any time as required. Along with the offered network solution, the single-location version is highly suitable as an introduction. Data from any test environment or the single-location version can be easily transferred to a multiple-user system.	The implementation of the basic version is a requirement for all modules.	Yes, modules are ready to use.	■ Interface to active management software ■ Expansion of module "Network Plans" ■ Expansion of Pathfinder Mobile APP

Module Details

Part 1

Company	Product Features – details				
	Asset Management	Connectivity Management	Resource Management	Power Management	
ABB	Decathlon's Asset, Resource and Capacity Management ranges from Equipment Catalogues, Asset Level Inventory, Floor Planner, Cabinet Planner, Asset Placement, Virtual Device Management, What-if scenarios, Trending & Forecasting, Contingency Planning and Work Orders – everything that a data operator needs to monitor, plan and manage assets and workflow.	Decathlon's Connectivity Management ranges from Mechanical and Electrical system chain monitoring, Cable Management, Physical Network Asset Relationships, Impact failure analysis and extensive reporting, monitoring and control of connectivity.	See Asset Management.	Decathlon's Power Management provided monitoring, control and automation from the incoming utility (e.g. substations), HV, MV & LV equipment and systems, Mechanical and Cooling systems, UPS and Batteries, PDUs and rack distribution to create a real-time view of power and energy capacity, utilisation and efficiences.	
AixpertSoft GmbH	Integral part of the Configuration Management Module. Dedicated data objects for commercial assets (in addition to configuration items), especially for the coupling of SAP, incl. articles, article catalogs, contracts, invoices and budgets. Commercial articles can be brought into relation to technical CI templates.	Module for the documentation and management of logical network paths (Layer 1 and higher). As much nesting as required of Layer 1 network paths through to Layer N network paths (end-to-end connection). Automatic and partially automatic route search according to technology, number of patches, length, attenuation, etc. Optimized route searches. Graphic visualization of the route structure (Layer 1, Layer N). Graphical switching. Patch (order) management and disruption management.	Not a separate module. The data base contains a staging area. With this, target and current inventories can be compared. Plausibility rules (4,000) are inherent in the business logic. In the individual modules, resource allocation and utilization is analyzed (distribution cabinet utilization, power, climate control, area, equipment, network connections, IP pools etc.). Reporting, dashboards and BI allow for comprehensive analyses.	Component of the DCM module. Dedicated power objects such as power distributors, outgoing lines , power circuits, fuses, power rails and power strips incl. connection points. Graphic visualization of the power infrastructure incl. impact analysis (outage scenarios). Designation of thresholds, aggregation of power loads, alerts and threshold comparison. Integration of real time measurements, analyses in power dashboards and power-flow diagrams. Graphic analysis in area plans and rack views.	
AT+C EDV GmbH	In the basic configuration of AT+C VM.7 asset management is already integrated as a central component of DCIM solution, and can, if required, be expanded to include the function of commissioning, using a barcode module, and maintenance and repairs using the module SPM.7.	With AT+C VM.7, the user defines the depth of detail for connection management. Pragmatically, two ports are connected; in detail, in the cabinet view and floor plan, cables can be laid in runners and routes . Every topology can be visually represented, and AT+C VM.7 continually checks the validity of the connections. Transmitted services can be queried at any position in the infrastructure. Using the Planning Mode Module, ports and fibers can be reserved for future use.	Using the Inventory Module, AT+C VM.7 can, thanks to the flexible data structure, manage physical resources of any kind. Thus, cabinets, servers, active and passive components, and cables of all types, and their life-cycle be represented. AT+C VM.7 checks the availability against defined thresholds and sends a signal by email if it falls below the threshold, in order to ensure trouble-free operations. Using the Planning Mode, resources can be swapped in and out.	The ascertaining of usage values requires a flexible solution, as only rarely is all necessary data consistently made available by the various manufacturers. AT+C VM.7 collects configuable data manufacturer-independently and individually by SNMP, e.g. from PDU's, servers or climate control equipment, and consolidates it for cabinets or areas. Using Snapshots, snapshots can be taken of a timed process, and the tendencies can be visualized.	
CA Technologies	Asset management is available in the solution. User can manage the lifecycle of the devices (from procurement to decomissioning, the in between status are reserved in the rack, moving to another rack, available from storage room). User can also manage services (maintenance), warranty and display a full history of each asset (from alerts, actions performed on the asset, etc...).	User can define and manage connectivities between the assets for network (copper/fiber between IT devices, patch panels and switches), as well as power connections (single phase or 3 phases power). All different connectors and cable type are available in the solution.	All resources, sevices, power, cooling, space, cabling, people can be managed in the system.	Power can be managed from real time information (tracking power consumption from any power providers/consumers) via multiple protocols (modbus,bacNet, SNMP, IPMI, WMI, Web services, BMS).	
COFELY Deutschland GmbH					

	Inventory Management with Contract and License Management	Planning Management (forecasts, future planning, what-ifs, Capacity Management, Life-Cycle Management, Administration of History, etc.)	Task Management	Change Management	Workflow Management
	Inventory management with contract management is a part of the offered functionality.	See Asset Management.	Offered based on the CMMS (Computerized Maintenance Management System), either own ABB software functionality or integration of customer-specific systems	See Asset Management.	See Asset Management.
	Module Configuration Management and License Management. Over 170 CI classes incl. port and slot conceptualization save the customer from having to formulate their own attribute schemas and business logics. Customer-specific extension possible. Cross-module preparation of data, incl. EAI concept for loader integration or integration of external data. Contract types (sales, leasing, hire, SLA, master agreement,...) can be nested as necessary. Dedicated software data objects and licence pools (incl. thresholds for person or CI based licensing).	Planning modes (Drag&Drop) for graphical distribution cabinet and area administration incl. visualization. Graphic analysis ("what-if"). Automatic work order generation on the basis of workflows. Task analysis and task lists. Condition attributes for all object classes (e.g. "in planning"). Status models in workflows (task status) incl. external system links (comprehensive change management or capacity management). Dedicated life-cycle history (change of status) incl. graphic assessment, network management status (under surveillance, outage,...), technical history (changes to objects by user or interface), logbook entries (audit-proof) for equipment, locations and events (activated by systems or user), multi-stage deletion concept (marked for deletion, deleted but visible to administrators, ultimately deleted). Cross-module planning functions for services, equipment, cabling, network paths, networks and addresses, port allocation, power, climate control, areas, zones,...	Based on Workflows. Orders and tasks can be automatically or partially automatically generated from the system or processing context (graphic changes to the distribution cabinet configuration automatically generates change and patch tasks). Tasks can be administered over a range of different user groups (requester, planner, authorizer, installer, inspections). Linking to external systems (change management) possible. Nesting depth of the workflow components as required (individual tasks) and sub-processes.	Based on Workflows. Pre-configured component library delivers individual processing tasks (relocation of equipment (cabinet, instance, service,...), patching, connection, installation, allocation of an IP address, capacity planning, cost planning...). The customer compiles their own comprehensive change process from these components into a complete process (strong divergence for individual customer requirements). Coupling with other change management tools.	Workflow Engine according to WfMC (Workflow Management Coalition) with activities model (individual tasks), status model (when will the next step in the process begin), data model (compilation of required data for individual steps), role model (which users, from which groups, are permitted to undertake which steps). Incident and Problem Management available as separate module. Order, change, release, capacity in workflow component library. Customer-specific workflows via Workflow Designer (Development Suite).
	No	For areas, cabinets, units, ports and connections, the future use can be planned and visualized using the Planning Mode Module. All resources used for this will then be automatically reserved or, using the Inventory Module, swapped in and out. Work tasks resulting from the planning can then be assigned to the operative teams, who are informed by email of the forthcoming changes. Using the web interface, the work tasks can be inspected and, after implementation, confirmed. Plans are managed transparently in AT+C VM.7 so that the IST documentation is only changed when the planning is implemented.	Task management is integrated into the Planning Mode Module.	Change management is integrated into the Planning Mode Module.	No
	Inventory is managed in the form of assets, contract and licenses can be managed with other CA products.	Full asset life-cycle, capacity management, what-if scenarios, project planning, complete audit trail etc..	Contracts can be associated with devices. Contracts are NOT managed in CA DCIM but can be managed with other CA products.	Planning of changes, uses responsibilities, SLA, escalations, workorders etc..	Within the solution, there is workflow associated with the changes in the Data Center. Through seamless integration with CA Process Automation the complete enterprise worflow can be managed.

Company	Product Features – details				
	Asset Management	Connectivity Management	Resource Management	Power Management	
Cormant, Inc.	Any asset can be modeled and attributes stored for it. This includes sub components (such as cards) and down to connection level.	Cormant-CS has supported full connectivity management for any type of connectivity from day 1. This includes power, data and conduit type data.	Both people, resources and power/cooling/device resources can be tracked and modeled over time.	Power connectivity and various power data can be tracked and modeled over time. Data may include nameplate rating, derated ratings and actual power used.	
DataCenterVision S.A.	All assets & devices in the data center are in the database: IT, power, cooling, etc. We may interoperate with a CMDB, or be the CMDB.	100%: we do manage cabling & patching, ports, capacity for connectivity, etc..	All resources can be managed, whatever the kind.	Power can be monitored real-time: we can collect from any device (servers, sensors, probes, smart PDUs, etc). We then store & display.	
Emerson Network Power	*Trellis*™ provides features to better utilize IT and critical infrastructure equipment by managing the inventory of all physical assets and determining used and available space in the data center with Inventory Manager. Additionally, our database allows you to record type, location and quantity of data center and infrastructure equipment. Information can be displayed textually in comprehensive charts and graphically using realistic representations of equipment.	*Trellis*™ allows users to create and manage power and data connections between devices and across the Enterprise. The user has the ability to create and manage connections graphically as well as textually and allows the user to trace connection paths graphically to determine what devices may be affected in the connection paths. *Trellis*™ also provides several connection attributes that can be applied to connections within the Data Center to better aid in finding available connection points.	Please see section on Asset Mangement. With this you receive an insight into the dynamic operating state of the integrated ressources.	Power System Manager includes the capability to monitor the power chain from utility to the rack PDU. Features include real time monitoring, alarms, capacity, dependencies, and connections. The one-line diagram illustrates the enterprise electrical layout and will allow data center managers to visualize the operating state of all the devices as well as dependencies linked with them. Power usage reports, PUE dashboards, and the capacity search feature provide a real-time view of the data center.	
FieldView Solutions	IT Asset Management Integration – Newly enhanced version now has a common format for importing and synchronizing data – making a simpler and deeper connection to asset management tools to automatically share information.	Partial	Partial – LiveView ™ – A live temperature and power feed that offers the most recent measurement readings for an at-a-glance view of global data center operations.	Energy Optimization – Enhanced reports provide power, cooling and space trending information to identify servers with long-term power draws and other anomalies.	
FNT GmbH	FNT offers an integrated view of all service assets and CIs over the entire lifecycle, from planning to decommissioning, including historization. Command provides a comprehensive integrated data model as central data repository, and an extensive component library with over 50,000 multifunctional network components for fast documentation and planning of the entire IT infrastructure. In addition to supporting IT assets, also mapping of all software and application information is available.	The Command Signal Tracing can be used to display connections, including their connection resources and ports. The signal tracing view can be called only from ports or objects. The schematic signal flow diagram is generated from database objects. All objects that have ports can be represented in the Signal Tracing program section and additonally connected in from the graphical view.	FNT Command provides a solution for capacity and performance management. Dashboards and Reports deliver a complete overview over all data center specific metrics, from the data center down to rack-level. The inter-layer representation of IT infrastructure allows a clear presentation and individual representation of information . An integrated service browser offers complete management and docu-mentation of services. CIs with physical and logical interrelationships can be documented and displayed.	Command manages the energy supply for CIs. Manufacturer data for the power consumption of the individual devices is assigned using the more than 50,000 CIs of the Command Library. Empirical and real values from measurement protocols can also be stored for the individual CIs and used for the balance and threshold value calculation. Power components, such as fuses, are displayed in graphical or tabular form in Command and can be connected with servers or active components using existing functions.	

	Inventory Management with Contract and License Management	Planning Management (forecasts, future planning, what-ifs, Capacity Management, Life-Cycle Management, Administration of History, etc.)	Task Management	Change Management	Workflow Management
	Cormant-CS supports full inventory management and can store details about contracts and licences in attribute data.	Full history of the life-cycle is stored for everything down to port level; history can be kept of any type of capacity data. Forcasting and future planning is managed using the Workflow module. Once work is planned it is possible to report on future capacity and see reserved space in racks/ports/ etc.	See answer above	Change management is through the workflow module. It allows fully configurable change management types (defaults supplied) for all types of change.	Workflow is the detail in the change management function. Workflow includes things like task lists, mutiple departments working on the task in the order they work on them and includes blogging functions to allow groups to communicate within the tool.
	All information related to hardware and software assets can be managed.	Full capacity is managed, at any level expected: space, power, ports on PDUs, ports on switches, ports on patch panels, cooling, etc. This enables planning management, lifecycle management, trend management, etc..	Day of expiration and content may be managed.	All moves, adds and changes can be managed: installations, transfers (dis)connections, etc..	All processes may be managed.
		Trellis™ allows users to plan and schedule future changes in their DC environment enabling better insight into the resources you need to drive your business. *Trellis*™ assists in the constant task of moves and changes that data centers require to plan each and every move, allows seeing the effects of changes at each milestone in a graphical, textual and calendar view, and shows what capacities exist and where they're available.		Supports Workflow Management through functions for Capacity Planning in case of any changes of IT Assets (Adds, Changes, Moves,...) .	*Trellis*™ Process Manager allows customers to take a systematic approach to solving their process management and workflow efficiency problems that exist today. By being driven from proven industry best practices and a powerful workflow engine, Process Manager customers will be able to assign tasks, track work and view metrics on that work which will help drive efficiency into their daily IT business processes.
		"What If" Planning Scenarios – Predictive analysis is critical to data center operations and FieldView 6.0 has enhanced functionality to help forecast space, power and cooling requirements vs. available capacity, and to simulate the impact of potential deployments. DataView ™ – A non-compressed cache of data for a wide variety of applications to access or publish historical and trending data for asset management and capacity planning needs.			Partial – Integrates with third party work flow tools.
	The administration of Inventory Management containing Contract and License Management is setteled in the Server Management section of Command containing a software management function. It foundation forms a software catalog that contains entries for all relevant software products. One or more software licenses can be created for the software products of the software catalog. To provide an overview of the application of the software licenses, these license entries can then be assigned to the ins.	The Command Planning module offers documentation of changes in logs that are recorded in structured form. Log entries can also be edited and the planning status changed. All elements in the database can be addressed as actual or planned instances. In conjunction with a planning number, Command offers the targeted control of changes, an essential feature of a controlled change process. The planning allows, for example, the construction, conversion and extension measures of devices and net elements, cables, assignments or general CIs to be performed. Logical objects, such as services or IP addresses, can also be planned.	The administration of contract data and their superordinate framework contracts, as well as components from the mounting part master, is offered in the Accessory Management section of FNT Command. A linking of persons, groups or organizations as well as their contracts and components is possible for every existing CI. When using this function, the entire body of information can be read out centrally from the database.	Integrated workflow functionality, optional Order Management module and integrated history funtionality provide internal change mangement; integration with third party Change Management Systems is available.	These can either be initiated internally or be part of a global external process. With the help of a responsibility matrix and the escalation routine, each process is monitored exactly. The definition of the workflow is absolved in a graphical editor. Standard workflows are integrated in the modules, which are based on this basic function. In addition Commands Order Management allows recording of incoming orders within the workflow.

Company	Product Features – details				
	Asset Management	Connectivity Management	Resource Management	Power Management	
IMS GmbH	IMSWARE ensures efficient IT operations through the company-wide control of all information and processes, with the goal of being able to process tasks and data at the point of origin (also using Barcode/RFID) and making the entire process available in a central database: ■ Stock administration with deliveries, storage, relocation, etc.. ■ Issuing/forwarding/return/repair/ etc. of goods. ■ Budget management, billing of services. ■ Interfaces.	IMSWARE takes into account not only the cables laid, the distribution boards and the existing active/passive components, but, for example, also information on the network wiring, logical Sichten , available free ports, capacity of cables and routes or autorouting within the physical and logical network structure. The condition of a network is comprehensively documented and visualized and is the basis for failure analysis / system expansion.	IMSWARE administers any resources in any depth of detail and dependency. The administration of history ensures that all changes are comprehensively documented and are as a result traceable. A comprehensive Regelwerk for the assessment of plausibility supports e.g. the user in the assembly of active components.	IMSWARE administers any components/objects from the area of power supply. A comprehensive Regelwerk for the calculation of power usage and its correlation to the corresponding equipment/components allows for a detailed assessment with the goal of making the energy balance transparent.	
iTRACS, a CommScope Company	iTRACS offers complete management and visualization of all assets to help optimize efficiency and reduce asset Lifecycle costs. We'll help you manage your assets from birth to death and everything in between – the complete lifecycle of all of your assets including lease management – in a context-rich 3D model. This "single pane" view into your entire asset portfolio makes it easy to manage any asset anywhere within your infrastructure. Users can find and manage assets by line of business, lease, model, CPU, power usage, or any other data point they wish.	Complete end-to-end Intelligent Connectivity Management from structured cabling to in-rack patching. Real-time connectivity data from imVision is visualized in our 3D model and leveraged to manage the interdependencies between servers, switches, patch panels, and each individual patch. Each point of connectivity can be managed individually or collectively. Unparalleled real-time intelligence at every switch and server port. You can deploy faster and conduct diagnostics instantly.	Holistic decision-support with a single point of management across all 6 key resources- assets, power, space, connectivity, network services, and cooling. iTRACS gives you command and control over an entity whose complexity can rival Nature's. No software modules or add-ons, no hardware legacies, no proprietary limitations, no dead-end mid-range functionality. Just a single, seamless, open software environment delivering enterprise-class performance across both IT and Facilities.	The entire power chain is seen, managed, and understood from the utility on the street down to every CPU in every device on every rack. Every power circuit is visualized in a holistic view that shows you complete power interconnectivity, end-to-end. Each point of connectivity along the power chain can be interrogated and managed individually or together as a whole. We call this power management strategy, iTRACS PowerEye™.	
OSL Gesellschaft für offene Systemlösungen mbH					
Panduit	SmartZone™ provides real-time visibility & automated documentation of all connected assets. The software collects critical asset attributes (location, connectivity, power, environmental) to maximize utilization of these IT resources. Users are notified of device connections or disconnections from the active network, allowing status tracking of deployed assets, unauthorised devices, non-networked fixed assets, & leases. Best Fit capability suggests multiple optimal locations for asset deployments.	Real-time management, monitoring and documentation of patch field connectivity. Software captures and alerts on planned/unplanned changes, both in the software and on SmartZone™ patch panels – and provides intelligent interconnect to active and passive devices. It simplifies patch field task management using work order integrations. SmartZone patch panels use LEDs to guide users through the patching process. Cables can be tracked as assets would be, improving tracking, provisioning and procurement.	All SmartZone™ software modules support resource management in different ways. Show power consumption in each zone, as well as available rack space, connectivity, cooling and levels, in zones 5 and 6 – allowing for full capacity management. Remote MACs using intelligent hardware allow sensible provisioning of skilled worker resource, man-hours and reduced travel costs. Work orders can be automated and tracked in response to capacity reclaim requirements, MACs or any other activity.	SmartZone™ Software provides complete visibility of how, when and where power is utilized within every zone, from building point of entry to individual devices (current load and power utilization at device/outlet, breaker, and cabinet level). Data is displayed in graphical or tabular form to help you better understand actual power consumption, and opportunities to maximize efficiency and performance for improved power utilization effectiveness (PUE) metrics and greater return-on-investment (ROI).	

	Inventory Management with Contract and License Management	Planning Management (forecasts, future planning, what-ifs, Capacity Management, Life-Cycle Management, Administration of History, etc.)	Task Management	Change Management	Workflow Management
	IMSWARE administers any inventory items and the related contracts (e.g. licence and maintenance contracts) with the respective agreements. By taking the contractual agreements into account during the allocation of licences, the legal certainty of the licencing is fulfilled.		On the basis of the workflow management integrated into IMSWARE, a range of processes for the processing of tasks (e.g. maintenance/breakdown tasks, patch tasks, re-location tasks etc.) are made available. The processes lodged for the tasks can be adjusted to special customer requirements for the workflow management through parametization. Furthermore, processes for any further task can be defined.	IMSWARE takes care of the necessary security of the IT operations through the transparency about all IT components /services and their relationships (CMDB in accordance with ITIL guidelines) with each other. A further important point is the ordered and traceable changes to the IT infrastructure and services, with the corresponding history.	The IMSWARE Workflow Management controls all operative processes; complete business processes dealing with planning, delivery, procurement, maintenance, relocation etc. can be presented and monitored with the IMSWARE Workflow Management. The workflows access the central object database and combine object and reource data with horizontal or vertical operative processes. Date , incident, threshold or any other monitoring provide information on the current conditions.
	Comprehensive inventory management is available within the iTRACS CPIM software suite. Details and information about assets can be collected, segregated, stored, and managed within the CPIM database – licenses, contracts, leases, components (hard drives, cards, fans, etc.), applications, line of business, etc. for each asset. Due to the flexibility and scalability of the CPIM environment, users can leverage the inventory management capabilities that they prefer.	ITRACS offers some of the most robust what-if and predictive modeling capabilities in DCIM. For example, Intelligent Capacity Planning from iTRACS is the ability to look into the future and estimate what the data center must provide – in CPU cycles, storage, space, and power – based on forecasts about what the organization will need two months, one year, even three years from now. This goes way beyond simple U capacity. With iTRACS, you can track, report, and plan against available usable floor space, U, slots/capacity for blade based systems, network or power connectivity – not just at the immediate connection, but reviewing through the entire circuit. This holistic approach gives you a clearer picture of what is truly available in terms of space, power, and network. It drives unparalleled Capacity Planning and the ability to extend the life of the data center – deferring or even avoiding CapEx – by helping you do more with less.	Task Management is available within the Change Management and Workflow Management functionality of iTRACS CPIM. Tasks can be created, approved, executed, and confirmed across a wide range of user roles and functional activities. This role-based capability is part of the myDCIM™ role-based user experience. The customizable myDCIM™ user experience supports roles including manager, operations, planner, technician, and others for both enterprise and multi-tenant colocation environments. With the myDCIM™ user experience, iTRACS provides each user with the information that he or she needs to manage the organization's physical infrastructure.	The CPIM® Browser offers a powerful new workflow management capability that speeds time-to-service and accelerates the business value of IT moves, adds, and changes. The CPIM Workflow Manager automates the processes associated with planned and unplanned changes to the IT infrastructure, whether the user is adding servers, consolidating servers, conducting a tech refresh, etc. This ITSM-based workflow management tool offers a number of important enhancements over conventional DCIM workflows.	■ Faster time-to-service for vital IT assets ■ 6-stage process across the end-to-end workflow – request, review, approve, plan, execute, and confirm ■ Broader collaboration with visibility into the workflow for Business automated, Finance, and other constituents typically outside of the process. ■ Deeper automation: Replaces existing processes with auto-mated workflow that eliminates manual steps, reduces human errors, and minimizes delays. ■ Easily integrates with other ITSM vendors – ServiceNow, etc.. We are integrating with other workflow engines like ServiceNow, this is part of our Open Platform strategy – to connect to everyone and give customers the broadest choice of how they want to manage workflows based on their needs, processes, and existing systems. We confirm to the customer's existing processes and environment – we don't make them conform to ours. Change requests can flow into CPIM from outside systems, or you can generate them within CPIM – the choice is yours, based on how you like to work and the investments in Workflow Management you've already made.
	The software provides custom data fields in which contract and license information can be recorded for each asset, and tracked.	Asset management capabilities, supported by intelligent hardware, allow tracking of the entire asset lifecycle while trending data and analysis allows you to make educated projections regarding resource utilization. SmartZone™ software provides extensive capacity management capabilities, automating the provisioning process by determining one or more optimal placement locations, and identifying and reporting on Data Center capacity and utilization at a granular level. Work orders for asset and connectivity MACs and report generation can be all be scheduled in advance.	The software provides custom data fields in which contract and license information can be recorded for each asset, and tracked.	SmartZoneTM Intelligent Devices and Gateways allow for thorough instrumentation of the entire data center, facilitating automation of granular, detailed data collection. You can choose to be alerted on changes to assets and connections (authorised or otherwise), power consumption, environmental characteristics, or cabinet level physical security. All changes are collected and documented automatically in the software. Alerts and reporting provide extra visibility for all parties.	Work order system provides a means of assigning and executing Asset/Connectivity related tasks via integrations with BMC Remedy work order systems as well as Microsoft SCOM, IBM Tivoli, and Ayanova.

Company	Product Features – details				
	Asset Management	Connectivity Management	Resource Management	Power Management	
Rackwise Inc.	Rackwise DCiM X includes detail representations of physical asset and visualization that includes visual representation, manufacturer specification, customer-specific data elements, over 100+ built-in data properties, component device visualization and placement within its parent device, rack placement, rack-unit, front and rear visualization, real-time monitors, in-service and lifecycle properties, cap-ex and opex costs, as well as relationships to department, customer, and business service.	Rackwise DCiM X includes a connection management utility that allows customers to document connects for power (by connector type and power), network (copper and fiber), SAN, USB, KVM switch devices, patch panels, and facility infrastructure cable plant. Rackwise's cable management is a built-in capability that illustrates point to point connections and distrguishes between cable types, connector type, and connection purpose.	Rackwise DCiM X includes documentation of facility power and cooling maximums, location and rack level thresholds for power, current, cooling and weight. These allow the engineer to model all moves, adds, changes, and decommissioned equipment and observe in real-time the results of a given change. Location and Rack thresholds are updated in real-time based on measured data where captured and modeled data (as a hybrid when real-time monitoring may not be deployed throughout the enterprise).	Rackwise DCiM X includes power modeling and management at each location in the system from utility and generator power maximums, to PDU and Breaker Panel branch circuits, to power strips and line cords attached to equipment. Rackwise DCiM X also includes single-line power diagrams for each locations where power engineers can visually inspect and manage all equipment and capacities throughout the entire power-chain within a single diagram where they can inspect capacity and model completeness.	
Raritan Deutschland GmbH	Accurate real-time views of your entire data center including servers, storage, networking equipment, rack PDUs, patch panels and applications. See floor PDUs, branch circuit panels, UPSs and CRAC units. Map physical relationships between all of these devices and see how the entire power and network chain in the data center is connected down to the port level.	Power chain management ■ Ability to budget power at every connection point in the power chain from the UPS to the device power supply with (n) or (N+1) redundancy. ■ Ability to view nameplate, budgeted and actual power (when metered) at every connection point in the power chain. ■ Ability to generate a visual trace route of the power chain Network connectivity. ■ Ability to create virtual to physical connections. ■ Ability to generate a visual trace route of the network chain.	Track all data center resources – space, power, cooling, connections and people.	Raritan's DCIM software for complete data center power monitoring providing a clear picture of available power, energy and environmental trends and helps operators to improve data center energy efficiency.	
Schneider Electric GmbH	StruxureWare Data Center Operation enables vendor-agnostic inventory management with real-time device failures and data shown within your data center physical layout, as well as recommendations on how to resolve issues. A location-based drill-down view provides a structured overview of data center locations, from a global to local view down to single assets. Instant overview of data center operations through inventory management, PUE calculator, real-time device alarms, and more.	On a monitoring via DCE, PME , CME, DCO, RA.	Full control and monitor of the resources with graphical representation .	Full control and monitor, with possibility for analyse and optimization.	
speedikon Facility Management AG	With *speedikon*® DAMS Asset Management, all assets required in a data center can be simply and efficiently administered. For each asset type, like rack, server, etc. specific information, including graphics, can be entered. Through a comprehensive library, a wide variety of assets are available for the user. However, the user is also able to generate its own assets. This information can be analyzed through a range of reports.	All connections in a data center, both network and power, can be planned and documented with *speedikon*® DAMS. A wide variety of connectors and cable types are possible. Using a cable path search, the optimal cable path can be calculated. A representation of the cabling for the entire data center in the form of a network spider diagram is possible, as is comprehensive reporting.	All resources in a data center can be planned and illustrated with *speedikon*® DAMS. Through assigning attributes like capacity, costs and consumption, a range of assessments on the requirements for the resources can be generated. Through changing the parameters, an examination of "what if"s can also be made. Using Planning Management, this examination can also be carried out for the future.	In Power Management, *speedikon*® DAMS differentiates between the data sheet from the manufacturer and the measured values. Measured values can be stored in the history and displayed through charts. Formulas for the calculation of, for example, the PUE can be entered. If the connections between equipment (UPS – busbar – PDU) is documented, a variety of different calculations and reports is possible.	
TKM – Telekommunikation und Elektronik GmbH	Device management for: Racks, Panel, Patch Cords, tertiary cabling, end devices, Server, Switches etc. [manually] Real-time monitoring of: ■ connectivity on ports ■ patch cords ■ panel	The entire network and every port (FO panel, RJ45 panel, switch port, server port) is been monitored automatically and in real-time. The information about physical connectivity status is analysided in real-time and the IT management is automatically informed everywhere on the world.	(is supported via software partners with fully compatible software tools to our monitoring electronic – e.g. VM.7 of AT+C)	(is supported via software partners with fully compatible software tools to our monitoring electronic – e.g. VM.7 of AT+C)	

	Inventory Management with Contract and License Management	Planning Management (forecasts, future planning, what-ifs, Capacity Management, Life-Cycle Management, Administration of History, etc.)	Task Management	Change Management	Workflow Management
	Rackwise DCiM X provides properties for all assets in the system to include in-service date, maintenance start/stop date, maintenance contract, as well as lease and warranty, software inventory and licenses. Further, Rackwise DCiM provides several reports for managing contracts, software inventories, and relation to physical asset with related notations. All inventory properties, including custom properties, are searchable on keyword or property type in Rackwise DCiM X.	Rackwise DCiM X provides comprehensive modeling of existing and future capacity requirements, trending analysis based on changes at each location coupled with real-time measurements, modeling of future deployments to anticipate capacity requirements prior to execution, and ability to look ahead in months or years to determine effective capacity run-out at all locations. Rackwise includes what-if scenario analysis to measure the impact of a change before it is performed, current and future capacity requrements, and comparisons between facilities.	Rackwise DCiM X includes the ability to monitor and report on contracts including maintenance, warranty, and leases which generates reports on maintenance expiring in 30, 60, 90 days and tracking by device, contract number, instructions on expiry, and expiry date.	Rackwise DCiM X tracks all changes made at location, rack and device level which serves to meet audit compliance, physical DR replication, and change control quality assurance process management processes. Rackwise DCiM X does not however generate service tickets nor does it initiate a change control process step. Rather, Rackwise integrates with leading change control and ITIL systems including BMC, ServiceNow, and other systems for robust change management functionality.	Rackwise DCiM includes basic workflow for provisioning power equipment and racks with balanced power to RDU devices. However, Rackwise's position on workflow, as per our interpretation of this question, is that Rackwise believes integration with existing workflow environments is far more advantageous to customers as their unique workflow processes cannot reasonably be duplicated by an off-the-shelf DCIM software, hence Rackwise prefers to integrate with a customer-specific workflow processes.
	30,000 items in models library.	real-time search and reserving of space, power and data connectivity based on the best fit. Search by make and model or any other particular search criteria. Once space is detected, reservations can be made. Track full asset life cycle.	Ability to track maintenance contracts and SLA.	Powerful and intelligent tools for workflow automation enable you to generate change requests, automate device moves, and maintain a complete audit trail of requests and work orders for compliance. It enables you to maintain best practices, improve operational efficiency, and people productivity.	Track workflow, issue requests and workorders.
	Administration of inventory inlcuded, Contract and License Management planned for future release.	Planning management includes comfortable features to create forecasts, simulations of different grow- and developement scenario to the point of capacity planning, lifecycle management of assets and history administration.	Contract-, order- and task management is included, data can also be managed via interface.	Data Center Operation: Change enables operators to gain control over the data center environment by implementing organized moves, adds, and change work processes, significantly reducing the risk of inadvertent downtime. With its automated workflow system, operators can assign work orders, reserve space, track status, and extract an audit trail for complete visibility and history into the change life cycle.	Full workflow management workflow can be costumized according to the customer needs.
	For every asset, *speedikon*® DAMS makes it possible to attach any number of documents, contracts, images and video files. A comprehensive assessment is possible using specifications which can be entered (e.g. show all maintenance contracts that end this year). Licensing administration can be integrated through customer projects.	With *speedikon*® DAMS Future Resource Management, assets are assigned the period of time during which they are in the data center (e.g. 01.01.2012 until 31.12.2015). The data center can then be viewed at any date, and only the current resources for that point in time will be visible. Naturally, besides reports, charts are also available for the visualization of consumption of resources.	All planning undertaken in *speedikon*® DAMS can be recorded, thus internal and external tasks can be generated. It is also possible to integrate an external order management tool, using interfaces.	Change management is integrated into the module Asset Management.	In *speedikon*® DAMS a wide range of workflows are integrated. There is no tool for the generation of the user's own workflows.
		(is supported via software partners with fully compatible software tools to our monitoring electronic – e.g. VM.7 of AT+C)	Only in terms of patch jobs and move, add and changes in layer 1 Additionally: (is supported via software partners with fully compatible software tools to our monitoring electronic – e.g. VM.7 of AT+C)	Only in terms of patch jobs and move, add and changes in layer 1 Additionally: (is supported via software partners with fully compatible software tools to our monitoring electronic – e.g. VM.7 of AT+C)	

Company	Product Features – details				
	Asset Management	Connectivity Management	Resource Management	Power Management	
tripunkt GmbH	For all equipment, place and date of installation are saved. In addition, further information like maintenance details, cost center and documents like records of measurements, tests and maintenance can be stored. Automatic and un-editable logging records the time and the staff member responsible for every change. All properties and data sets are accessible and exportable using Reports.	■ Documentation of the primary, seccondary and tertiary cabling. ■ Representation of LAN, LWL, WAN, telephone and power connections. ■ Assistants for the generation of patch & line connections, jumpers, etc.. ■ visual and interactive representation of network paths including the associated patch and line connections. ■ Overview of ports, targeted port search and system-wide search functions. ■ Representation of cable-sharing and port adapters. ■ Naming system for unified naming.	See Asset-Management.	In Pathfinder, the power cabling can be documented with PDUs and UPS through to the fuses. For every cabinet, capacity, temperature and weight specifications can be stored according to the values supplied in the equipment specifications, and validated against threshold values. Deviations from the specifications are highlighted in color.	

	Inventory Management with Contract and License Management	Planning Management (forecasts, future planning, what-ifs, Capacity Management, Life-Cycle Management, Administration of History, etc.)	Task Management	Change Management	Workflow Management
	For all equipment, values for care-packs and maintenance contracts can be stored. In addition, the document administration allows the storing and linking of any documents.	Even in the basic version, Pathfinder can calculate and visualize thermal load, power usage, weight and load per rack or room. All changes are tracked automatically and are displayed in the history. In addition, the module "Task Administration" offers comprehensive planning possibilities, what-if scenarios can be designed, validated according to the current inventory state, and saved for later implementation.	The module "Task Administration" allows the planning, testing and undertaking of work tasks. This includes: ■ Graphic representation of the changes in the cabinet representation. ■ Colored marking for new (green), changed (orange) and removed (red) equipment and patches . ■ Logging of all work steps. ■ User-defined work instructions.	See module "Task Administration"	See module "Task Administration"

Module Details

Teil 2

Company	Product Features – details			
	Busines Intelligence	Administration of Investment in Equipment	Dashboard-, Report- and Print Management	Further
ABB	Decathlon Analytics is based on a high-performance, long-term historian that stores all of the required data on performance, changes, utilisation, workflows and assets allowing for advanced trending, forecasting, reporting and analytics. This high-performance capability utilises ABB's industrial and process automation technology and expertise and offers massive flexibility in allowing users to build custom reports, dashboards and queries allowing for the comparison of sites, racks, halls etc..	Decathlon Financial Management is based on market-leading technologies that allow for financial management, reporting and analysis. Users are able to understand key financial metrics such as cost/kwH, cost/transaction, cost/MW, marginal delivery cost, TCO and investment return allowing for improved financial management, automated tenant billing, chargeback reporting and much more.	Decathlon Analytics is based on a high-performance, long-term historian that stores all of the required data on performance, changes, utilisation, workflows and assets allowing for advanced trending, forecasting, reporting and analytics. This high-performance capability utilises ABB's industrial and process automation technology and expertise and offers massive flexibility in allowing users to build custom reports, dashboards and queries allowing for the comparison of sites, racks, halls etc..	Energy-Management Decathlon offers the possibility of the extended control/automation and the strategic energy procurement of a DataCenter. Based on the concept "Software Defined Power" – the workloads between data centers are moved based on the cost or availability of energy.
AixpertSoft GmbH	AixBOMS was one of the first Eclipse based systems on the market (commercial branch). Eclipse integrates BIRT (Business Intelligence Reporting Tool) as BI engine. AixpertSoft (as "early adoptor") converted all dashboard, reporting and BI functionality within AixBOMS to BIRT starting in 2004. Crystal Reporting is supported. Further solutions can be supported through Simple Database Integrator (SDI).	For Asset Management, additional objects are implemented. Such as assets, contracts, expenses, budgets, costs, cost center and license pools. These objects are built for financial management of IT inventory.	All function-specific modules contain a specific dashboard (formulated and designed for the corresponding content). The system delivers more than 200 standard reports. Every list of queries, form or graphic in the system can be issued as a data file, image or via the print mechanism (print screen and print data). Customer-specific reporting can be realized via the Report Engine (part of the Development Suite).	Business Service Management (BSM) Module for the documentation and management of business services and services. Comprehensive template functionality (instantiation of entire service landscapes), service catalog management, monitoring integration (dedicated monitor objects), control of monitoring systems (for the monitoring of services), extreme depth of representation for the transition to CI level (all object classes available in AixBOMS, incl. non-IT objects, power, addressing, network paths,...). Tenants and customers (customers of a provider, for example, can only see their own services and CIs).
AT+C EDV GmbH	No	No	Reporting is a central element of a DCIM solution, in order to make decisions on the basis of facts and plans. AT+C VM.7 supports the user with this through the Report Assistant, a sophisticated, integrated reporting module, which adapts automatically to the flexible data model and thus keeps the user clear of the complexities. Graphic analysis is possible using the visual module or are displayed as DWG files.	Route Search and Network Spider Diagram The route search supports the user in finding routes through the complete distribution system. From the distribution data AT+C VM.7 automatically generates a network spider diagram.
CA Technologies	For real-time management, data reporting is available, allowing drill down, drill up and drill through capabilities.	Included in asset information is costing, warranty & maintenance. Additional information can be associated with the devices.	Dashboards can be built as necessary for real-time consumption information. Same for reporting.	
COFELY Deutschland GmbH				
Cormant, Inc.	Some BI is provided via the dashboard, but Cormant-CS also supports external BI. Internal BI includes visulization of capacity both current and historical along with historical data about every aspect of every stored item.	Cormant-CS is not a financial management tool. However, is is perfectly possible to store purchase or lease data on any item and use this to manage value, depreciation and expiry of leases/SLAs/etc.This can interface with a CMDB or financial system.	Reporting is managed using a fully configurable reporting engine allowing any data to be reported on. Reports can be printed, exported or scheduled on a regular basis. Dashboards display data captured historically as well as point-in-time data. Dashboards can be multi-tabbed and customized per user as well as windows per screen/tab.	Mobility Two types of mobility are offered. The first is off-line mobility with all or part of the database syncronized. This runs on commerical rugged devices from companies like Motorola and Intermec and supports both RFID and Barcode scanning. The other mobility is on table devices which run the web application and provide full on-line access to the data.
DataCenterVision S.A.	Our data model is open & documented. We run on a SQL engine. So any reporting tool can freely address our data repository.	All data related to equipment can be managed: technical, fiancial, etc..	We have a built-in dash-board. All the content of the reports & all the results of the queries can be edited, in several formats: CSV, XML, HTML, etc..	LDAP, Active Directory We are fully compatible.

	Integrated Engineeringenviron-ment Decathlon offers the advantages of an integrated and continuous engineering environment. The entire system at different levels (levels 0 – 3) is configured by means of an engineering tool.				
	Cable Management Module for the presentation of the physical cabling, incl. maps, site, area and floor plans (includes cable ducts routing, calculation of length, switching), switching logic (technology, plug types), planning, patching (incl. visualization in the distribution cabinet administration), patch orders, cable distribution points, cable paths, wizards for complex and bulk connections, cable and route utilization (capacity).	Networking Module for the documentation and administration of networks (IPv4, IPv6, MAC, VLAN, DecNET, VTAM, telephone,...). Special functionality for providers, such as organizational networks, subnetwork matrix and utilization information, dual stack, hostname calculation, reservation pools, network access and bundles, IP address calculation (first, last, random, next). Logical, temporary, primary and secondary addresses. DDI integration (DNS, DHCP, IPAM).	Data Center Management (DCM) Contains dedicated space and area administration (incl. area plan, area type (housing areas, IT areas, service areas, barricaded space, customer-specific areas, zones)). Areas have features (can contain objects, cannot contain objects), can be used for calculations, and are nestable as required. Invoicing is possible according to area, cage, cabinet, port, etc. CIs (e.g. distribution cabinets) are placed on areas and grids. From the CI level, all technical modules are accessible. Power management and multiple tenancy capability are integrated.	Integration Engine This is an ETL tool for the integration of data from and out to any data sources. Available in enterprise and light versions. Incl. analyses, display and choice of data source structure (pre-selection editor), source and target data allocation (mapping editor), transformation and adjustment (rules and scripts), runtime (loader server), projects, connectors (pre-configured), evaluation of loader processes (success of loader process, delta, calibration, event control, parallelization, post-processing). CLI Command Line.	Development Suite AixBOMS development environment incl. forms designer, report designer, repository designer (creation and configuration of data objects and queries incl. filtering), workflow designer (graphic interface for components and processes), feature programming and scripting, assistant framework. The tool is based on Eclipse IDE and enables the customer to integrate their own development teams and projects.
	WMI from Microsoft We are fully compatible: we may read servers, and collect, store, display any kind of information.	IP addresses ma nagement Hosting & colocation companies can manage IP addresses attached to customers, routers, servers, etc..	Management of persons, companies The database has a table to manage persons, services, departments, companies, etc. So any device, HW or SW resource, can be attached to those different levels: applications, etc..	Alarms & alerts We have a built-in engine to create & generate all kinds of alerts & alarms.	

Company	Product Features – details			
	Busines Intelligence	Administration of Investment in Equipment	Dashboard-, Report- and Print Management	Further
Emerson Network Power			■ Device Changes by Rack ■ Device Inventory ■ Inventory Metrics ■ Rack Inventory ■ UDP by Device ■ Alarms by Device ■ Consumed Capacity by Device ■ Data Points by Device ■ Energy Consumption (kWh) by Device ■ Power Trend Based on Capacity ■ Stranded Capacity by Rack ■ Time Sensitive Events by Device ■ PUE Dashboard ■ Electrical Energy Consumption ■ Capacity Trend Dashboard ■ Building Power Systems ■ Workload per Process ■ Performance per Process ■ Workload per Participant ■ Performance per Participant	Mobile Extension of the *Trellis*™ Platform to a mobile device for easier workflow in the data center. The following functions are available here: ■ Floorplan Navigation, ■ Placement/Positioning, Place, remove and move devices, ■ Update Information in real-time or offline, ■ Image recognition technology and bar code scanning capabilities for faster device configuration, ■ Search for racks and devices, ■ View and edit device properties, ■ View device capacities and port information, ■ Update and view power connections ■ Alarm: Insight & Filter
FieldView Solutions	Data Warehouse Excel Integration – Fully-customizable Excel features enable users to save any query or run any regression. Extended Business Intelligence (BI) capabilities – BI functionality have been greatly enhanced, including capacity planning of space, power and cooling.		Enhanced Dashboards – With the use of configurable widgets, FieldView's user dashboards can now be customized. Whether the end user wants to view PUE data or just alarms, this new feature provides only the information desired.	Mobile Leveraging HTML5, FieldView 6.0 information is now optimized for smart phones and tablet viewing and interaction.
FNT GmbH		The Command section Billing Data processes billing data records and provides them in formatted form for further processing. The provided services (service type) are grouped to form products that in turn can be billed to the customer. The comparison of the cost and the sold product provides a coefficient that specifies the efficiency of the service offering.	Dashboards tailored for Management and Operator use provide detailed insight into current status, metrics, and KPIs. FNT Commands' Query Editor module offers possibilites to define database queries and generated reports. These reports can also be schedules and results mailed to recipients in various formats. All search result tables allow export in Excel, CSV and PDF. Data can also be accessed by external / third-party tools through meta-schema, web services, or direct database connection.	Cooling Management FNT Commands Aircon manages climate zones, climate devices and climate circuits. The heat load caused by consumers is accumulated for each cabinet, climate zone and room level and compared with the climate capacity. Both open and closed climate zones are available as well as predifened threshold values for rooms, racks or climate zones. Addtionally, an interface to CFD modelling is avialable.
IMS GmbH	The IMSWARE database forms the basis for the systematic assessment/ analysis and assessment (collection, analysis and representation) of all data, so that goals like "reduce costs, minimize risks, optimize business processes, etc." are supported. With this, IMSWARE provides the basis for decision-making for measures and actions.		The IMSWARE dashboard creates a central, system-independent visualization of large amounts of data and concentrates them into compressed form. The easy-to-read results are clearly presented. Tables, diagrams and KPIs ensure a clear representation of the chosen indicators, illustrative historical observations and compressed data, each according the intended application.	

	Energy Insight Insight into power consumption and KPIs related to this (e.g. PUE according to different, configurable definitions) customizable dashboard that allows manual readings to be considered in calculating industry-approved efficiencies (PUE and DCIE) and taking out certain parts of facility load in a mixed-use facility.				
	Ticketing Ticketing System Integration – Full integration with industry-leading ticketing systems enables integration with customers' operational processes for resolving critical alerts. FieldView 6.0 generates alarms, and aggregates alarms generated by the systems it monitors.				
	Server Management FNT Commands Server Management represents the complete server landscape in the operating systems, software and applications running on the servers.	Outside Plant Cabling FNT Command offeres a GIS solution WebGIS providing geo-location for an unlimited number of users modelling nodes, pipes and trays on a GIS based GUI in various maps. Additonally, management of customer and provider information is integrated in the WAN section, mapping line data and services in the corporate network implemented between locations, even for multiple providers.	Telco The Telecommunication Resource Inventory solution from FNT enables centralized, integrated management of all network and service resources in the telecommunications environment, thus providing the basis for a modern OSS/BSS architecture. This central source for network and service data encompasses all relevant resource information for the planning and engineering, service fulfillment, and service assurance processes of telecommunications providers and multi-service providers.	Asset Tracking / Discovery & Audit Connectors/Integration to Asset Tracking Solutions (such as RF Code), Asset Discovery (such as Infosim StableNet), Asset Manage-ment and Autiding (TrackIT) are available.	Service Management FNT offers a deep integration between its DCIM product Command and the Service Management solution FNT Service Planet. FNT ServicePlanet is the control center for product portfolio, providing the foundation for defining, managing, and monitoring all your business services and service assets over the entire service lifecycle.

Company	Product Features – details			
	Busines Intelligence	Administration of Investment in Equipment	Dashboard-, Report- and Print Management	Further
iTRACS, a CommScope Company	iTRACS' new myAnalytics™ reporting and analytics engine offers a whole new level of enhanced reporting and ad hoc data analysis helping CPIM® users uncover new insights about their infrastructure. Standard out-of-the-box reports are available for immediate use on key metrics like power, space, etc. In addition, users can do intuitive, on-the-fly data exploration to track the performance and evolution of their physical ecosystems. This changes the game in DCIM analytics. With myAnalytics from iTRACS, you can freely investigate your infrastructure data and turn that data into insight about what's happening on the floor, where improvements can be made, and how best to implement them. This is your own personalized analytics tool for improving efficiency, lowering OpEx, and deferring CapEx. ■ Open and exploratory: Interrogate your data via interactive dashboards and the standard reports that come with the software. ■ Intuitive: It's convenient and easy-to-use for any user – casual, executive, or power. ■ Dynamic: Your physical infrastructure is a dynamic entity that's constantly changing and evolving. myAnalytics helps you track this evolutionary arc, exploring ways to work smarter and implement continuous quality improvements across the operation. myAnalytics™ comes with a series of standard reports on power, space, and other metrics that you can start using immediately. The browser-based tool also supports on-the-fly data analysis to uncover diamonds of insight about data center resources, activities, and workflows – insight that would otherwise remain hidden.	Asset and Lease Management – we facilitate management of servers and their leases to ensure optimum economics asociated with Asset Lifecycles and Lease Management. We are also planning to integrate with SAP to connect our infrstructure information with the enterprise's financial data. Customers will be able to manage financials using holistic insight into the costs and economics of their IT and Facilities investments.	We can output a huge variety of reports from an endless array of dashboards. Reports can be easily exported as pdf, csv, and other formats – just point and click.	Intelligent Event Management We can capture alerts and alarms from external systems and present that information within iTRACS so the event can quickly be managed and resolved. This includes potential impacts on interrelated infrastructure (because no asset is an island). For example, users can see which servers will lose access to storage should a PDU fail in providing power to a storage array. Our open platform easily integrates with other vendors, such as CA's ServiceDesk or HP's OpenView, for day-to-day event management.
OSL Gesellschaft für offene Systemlösungen mbH				VM Management Using VM Management, the creation, control, monitoring and migra-tion of virtual machines is possible. In addition, back-up options are available.
Panduit	We provide business intelligence solutions for energy management, capacity planning and forecasting to improve your management and operation of the data center. This is achieved through building a 'data warehouse', and integrated workflow tools add to this.	Software allows recording of asset cost and lease information; this together with accurate up-to-date asset location, deployment and decommisioning information builds a thorough and accurate picture of the asset lifecycle. This aids depreciation scheduling, prevention of premature decmissioning, and timely and efficient asset procurement, while supporting official depreciation regulations required for compliance when accounting for fixed tangible assets or renewals.	The automatically-updated database is leveraged to produce accurate documentation on multiple aspects of the physical infrastructure. The software provides a set of pre-defined reports and dashboards in a variety of file formats with advanced visualizations of operational and trend data. Reports can be designed using drag-and drop, and scheduled for generation/delivery to email recipients. Dashboard view uses icons and values to reflect health status.	

	Intelligent Space Management With our interactive, NAVIGABLE 3D modeling of physical space, iTRACS is able to help organizations see, understand, and manage data center space. Rack management, cabinet densities, U positions, and asset utilization are optimized using our in-context view of the spatial relationships that continuously change and evolve in physical infrastructure. With features like "enclosure pads," you can predefine where racks, mainframes, and other assets can be placed with Granularity.				
	Storage Management Storage Management allows the creation of a storage pool and of global namespaces. Further functions, like mirroring, cloning, and data mobility, can also be operated in this module.	Network Management Through Network Management, the creation of a convergent network takes place, over which I/O and LAN functions are represented in one. In addition, functions like broadband management and network virtualisation can be administered here.			

Company	Product Features – details			
	Busines Intelligence	Administration of Investment in Equipment	Dashboard-, Report- and Print Management	Further
Rackwise Inc	Rackwise DCiM X provides a comprehensive collection of business focused reports that include opex and capex costs by location to account for location power cost, personnel costs, annual upkeep cost, facility ammortized cost, cost for cooling as a function of power cost, etc, as well as charge back reporting based on real-time measured capacity, trend and cost analysis between locations to determine lowest cost location to operate a business service, tech refresh cost savings, ROI, etc..	Rackwise DCiM X provides business management personnel with the ability to view lifecycle cost, power, cooling, and rack cost trending, total facility costs (capex and opex), device level capital cost and annual maintenance over lifecycle, as well as consolidation and replacement cost analysis (opex cost savings as a result of replacing older equipment with ROI based on measured real-time data).	Rackwise provides 110+ reports and dashboards that range between asset reporting, technical reporting (ie: device placement, network and power connections, capacity), power reporting (ie: equipment balance, power capacity by location/rack/device), failure anaysis reporting (ie: impact on business by failed device), business reporting (ie: cost analysis, ROI, trending/forcasiting of capacity, charge back reporting, etc), Green Reporting (PUE, etc), and others.	Real-Time Monitoring Rackwise DCiM X includes unlimited real-time monitoring capabilities using industry-standard communication protocols such as SNMP, IPMI, bacnet, modbus, and Intel DCM.
Raritan Deutschland GmbH	Built in reports save time in creating management reports. Create custom reports using our open platform to work with the report utilities you already have (sql report writer, crystal reports, etc.).	Ability to track financial costs.	Raritan's dcTrack DCIM Solution provides you with complete, accurate views of capacity, including physical space, power and network ports available in racks, plus the capacity of infrastructure devices like UPSs, CRACs, and circuit panels. With a centralized database that includes all connection and capacity information, you no longer need to run back and forth to the data center.	
Schneider Electric GmbH	Energy cost – IT Optimization etc..	Visualization and administration of all lifecycle data is included.	The StruxureWare Portal provides transparency to data center key performance indicators and business metrics, displaying customizable information for a high-level overview of data center operations. The Portal makes it easy to share information with relevant colleagues or external agencies, providing a shared platform and bridging the gap between Facitlities, IT and the C-level stakeholders.	
speedikon Facility Management AG	Using *speedikon*® DAMS reliable data can be delivered to BI solutions.	Using *speedikon*® DAMS, information on costs and an respective overview of costs can be generated. This data can then be used as the basis for professional commercial systems.	The data entered into *speedikon*® DAMS can be visualized in a range of various reports and in dashboards. Customers can generate their own reports and these can be integrated into *speedikon*® DAMS. Using a search engine, it is possible to generate "Ad hoc" assessments quickly and simply. Printing, also of the graphics, is of course possible, as well.	Performance Monitoring *speedikon*® DAMS Performance Monitoring visualizes all important parameters of a data center. All KPIs of the data center, such as energy use, occupancy of units , area capacity and costs are shown online graphically when exceeding thresholds. In the area of energy data no additional hardware is necessary – a simple query of intelligent measurement points, such as PDUs are possible.
TKM – Telekommunikation und Elektronik GmbH			(is supported via software partners with fully compatible software tools to our monitoring electronic – e.g. VM.7 of AT+C)	
tripunkt GmbH		Possible using integrated document administration. Pathfinder ena-bles the storing of additional information for every network element, like: ■ Inventorization data ■ Cost center ■ Maintenance data etc. Using Reporting e.g. inventory and other lists can be generated.	Along with comprehensive standard reports, the assistant-controlled reporting system offers comprehensive options for individual savable reports. The following standard reports are already available: ■ Data center handbook, equipment list. ■ Connection report with listing of the next patches, the next line connections, the network path-ends . ■ Network path report with listing of network path-ends. ■ Cable report with listing of cables and incorporated line conections. ■ Data outlets report.	Module "Pathfinder Mobile" The Android App makes the following functions available: ■ Synchronization with Pathfinder Server ■ Offline Viewer for documentation ■ Graphic representation of the DC infrastructure (rack representation to scale) ■ Display of network, cable paths and port circuitry ■ Patching & unpatching: Patches between ports cab being set or re-moved, and later compared ■ Task administration: view and handle/edit work tasks ■ NFC/RFID support, barcode scanning, full text search

	Single-Line Power Diagram Rackwise DCiM X includes single-line power diagrams, the first for the DCIM industry, that allows customers to visually inspect and manage any power device along the power-chain from utility power and generators to PDU to RDU to line-cord attached to the devices power supply.	Device Auto-Discovery Rackwise DCiM X includes the ability to detect devices via network inspection and discovery of new devices that are not already present and accounted for within Rackwise DCiM X. This enables customers to determine new devices and map these to physical assets in specific rack locations.	Floorplan Diagram Management Rackwise DCiM X includes the management of floorplan diagrams with floor-mounted equipment, rack equipment, row and column designations, aisle containment placement, and multi-layer support for underfloor or over-ceiling layers such as fire supporession, air flow plenums, power and network cable trays, etc. for management and visualization of the enterprise's facility floorplans.		
	Module "SNMP" The management module includes the following functions: ■ SNMP login information administrable for all equipment. ■ Live view with representation of port occupancy, port status, IP and MAC addresses, VLAN (if supported by equipment). ■ Administration of MIBs per type of equipment. ■ MIB browser with request for individual SNMP values.	Module "Network Map" The visualization module Network Map offers: ■ Graphic representation of the physical network or desired sections. ■ Display of additional information on lines and connections. ■ Automatic, context-dependent layout. ■ Savable configurable views. ■ Navigation and print function.	Module "Vector graphics" The Vector Graphics Module distinguishes itself through the following features: ■ Storing of vector graphics (dwg, dxf, svg). ■ Importing of spatial references from dwg drawing data. ■ Overlaying/hiding of AutoCAD levels. ■ Changing of color values per AutoCAD level. ■ No AutoCAD license or installation required.		

Interaction with Partners

Company	Following partner-solutions we recommend integrating
ABB	Decathlon and its core platform have already been integrated with thousands of external and 3rd party applications across Mechanical, Electrical, IT and ancillary (e.g. Fire, CCTV, VESDA, Access Control, etc.) systems. Decathlon also has extremely broad API, network, interface and protocol support and has an extensive partner network.
AixpertSoft GmbH	Because of our experience of finding a wide variety of management and administration tools already being in use at our customers, we generally follow an open integration strategy (and not a replacement strategy). In particular with regard to proprietary sensor technology, ITSM, monitoring and NSM, data sources and discovery (systems or scripts), we see an "open" approach and multiple system integration possibilities as the appropriate attitude. As a result, we do not typically recommend any specific partner solutions, but rather, we focus on integrating any tools specified as per the customers' requirements .
AT+C EDV GmbH	FUTURE-PATCH (TKM)
CA Technologies	We have close relationships with a large number of vendors, both from a CA DCIM perspective and the broader CA perspective.
COFELY Deutschland GmbH	Not specified.
Cormant, Inc.	This is very customer dependent and their specific needs. CMDB and upstream work-flow systems tend to be the ones with which we integrate the most.
DataCenterVision S.A.	We have a network of qualified technology, service & business partners
Emerson Network Power	Integration with ITSM by IBM (Smart Cloud Control Center)
FieldView Solutions	Many customers use Nlyte for Asset Management and FieldView for DCIM Monitoring
FNT GmbH	Future Facilities 6SigmaDC
IMS GmbH	Not specified.
iTRACS, a CommScope Company	We have active integrations with more than 15 Partners who are importatn technology providers in the data center space – Intel, HP, VMware, RF Code, Power Assure, BMC, and many others. This is a manifestation of our Open Platform strategy – to connect the world to CPIM and give customers the broadest possible coverage across the data center. NO SINGLE VENDOR CAN DO IT ALL, so our goal is to make it easy for customers to connect all of their vendors together in a single holistic DCIM platform that lets them collect, aggregate, visualize, and analyze real-time information about the physical environment. And we are adding more integrations continuously – our CPIM 3.2 Launch in April featured three more integrations, including an integration with imVision to provide real-time Intelligent Connectivity Management. And we have two more integrations poised for announcement by June 2014!
OSL Gesellschaft für offene Systemlösungen mbH	Solaris and Linux Enterprise Distributions are supported as platforms for OSL UVS and OSL UVC. For the hypervisor nodes, KVM, XEN and VirtualBox are installed.
Panduit	Panduit has a number of partners across our offerings in the data center, Enterprise and Industrial Automation space. With regards to DCIM, IBM Tivoli has been a longstanding partner and this facilitates integration with the SmartZone™ software.
Rackwise Inc.	Rackwise works with several technology solution providers who offer complimentary systems that themselves are not DCIM solution. Rackwise recommends RF Code (RFID tracking), ISA (hand-held inventory and barcode system), BMC (for automated application discovery, ITIL/ITSM, CMDB workflow and ticket management), ServiceNow (for CMDB workflow and ticket management, IT Watchdogs (for discrete IP power and temperature sensors), HW group (for discrete IP power and temperature sensors), Intel DCM (for Intel chip device monitoring and advance device and circuit monitoring protocols), and others.
Raritan Deutschland GmbH	Reporting, CMDB und Change Management
Schneider Electric GmbH	Integration is possible with different partners, strategic aliances are also done , like for example with: BMC Remedy, Microsoft VMM, Microsoft SCOM, Vmware vSphere, Cisco UCS, HP Openview, Microsoft Excel, Aperture and Schneider Electric.
speedikon Facility Management AG	*speedikon*® DAMS is independent and can be combined with any solutions.
TKM – Telekommunikation und Elektronik GmbH	The TKM monitoring electronic could work with the following partners based on customised requirements: ■ VM.7 of AT+C ■ CableScout of JO Software Engineering. The monitoring electronic could be combined with the software functionality to an entire DCIM solution.
tripunkt GmbH	Planned interface to Icinga and Nagios (for Q4/2014).

	Following partner-solutions are components in our DCIM solution	further information
	Decathlon's strategy is to provide additional and tighter integration with selected , best-in-class' partner solutions, e.g. Nlyte or DataCenterVision for IT asset and capacity planning.	Not specified.
	None	Not specified.
	Not specified.	Not specified.
	None	refer www.ca.com/fr/products/detail/ca-dcim.aspx
	Not specified.	Not specified.
	We have no mandatory partner solutions, it is customer dependent.	Not specified.
	We may incorporate DCM, from Intel	Our solution is fully interoperable with the web services, so we may have an easy integration with any other software application.
	The DCIM-solution is a solution built from scratch, however, due to open interfaces it is compatible with most IT- and Facility-assets, Service processors as well as sensors. Via API software solutions from other vendors can be integrated, such as BMS-systems, ITSM solutions etc.	Not specified.
	DataView™ and LiveView™ – we provide API interface to real-time and historical data to any IT, facilities or financial system.	■ Integrations: BMS- Alerton, Andover, Automated Logic, Honeywell, Johnson Controls, Siemens, Tridium ■ EPMS: Forseer, PowerLogic ION Enterprise, PowerLogic SMS, Schneider Electric, Seimens, WinPM.net ■ Hardware: _Asco, Atlantic Detroit Diesel, Caterpillar, Cummings Power, Cyberex, Eaton, Emerson/Liebert, Geist, GE PLC, HW Group, Layer Zero, MGE, Mitsubishi Electric, PDI, Raritan, RF Code, RLE Technologies, Russelectric, Schneider Electric, Siemens, Server Technology, Spinwave, Square D, Starline, Tripp Lite, Veris Industries ■ Software: Intel DCIM, Nlyte
	Intel DCM: Energy Director	Not specified.
	Not specified.	Not specified.
	We can package integrations with our software suite in any flavor or configuration the customer prefers. Total flexibility. The list of certified integrations available to customers is too long to include here ...	Not specified.
	Not specified.	Not specified.
	While Panduit is partnered with IBM Tivoli, we have integrated with other solutions (e.g. BMC Remedy, Microsoft SCOM). We will be introducing further partnerships or integrations in future.	Panduit is committed to addressing our customers' most critical business challenges. We work with current partners and seek out new partners to develop and deploy physical infrastructure solutions that drive operational and financial advantages for our customers.
	No partner-solutions are embedded by default into Rackwise DCiM X. However, all of the above partner-solutions have been integrated with Rackwise DCiM X in order that deployment of such technologies may be accomplished very quickly, on average within 3-4 weeks. Rackwise chose this approach, versus bundleing in by default, in order to keep our customers acquisition costs down, and because no DCIM vendor can fully anticipate the existing technologies and needs present within its prospective customer base.	Rackwise works cooperatively with technology providers to ensure proper integration where desired, through existing knowledge of our system and resulting integrations and best practices derived from working with over 150 customers. In addition to integrating with industry recognized solutions, Rackwise has also integrated with customers' home-grown system where relevant data and value can be derived through sharing between system environments. These cases highlight the fact of Rackwise's open architectured and ability to integrate with other customer systems to best server their needs.
	Not specified.	Not specified.
	Integration is possible with different partners, strategic aliances are also done , like for example with: BMC Remedy, Microsoft VMM, Microsoft SCOM, Vmware vSphere, Cisco UCS, HP Openview, Microsoft Excel, Aperture and Schneider Electric.	Not specified.
	None	Not specified.
		Not specified.
	None	Not specified.

Technical Details

Part 1

Company	System Architecture	What database is the system based on?	Is the structure of the database disclosed?	Is there a unified database for all components?	Supported Operating Systems	
ABB	A flexible and scalable system architecture according to industry standards, which provides either for existing as well as for new data centers a solid management base (see http://search-ext.abb.com/library/Download.aspx?DocumentID=2PAA110756&LanguageCode=en&DocumentPartId=&Action=Launch)	ABB in-house developed, with ODBC and OPC connectors for external real-time input/output e.g. SQL or Excel queries.	Yes	Yes	Microsoft Windows Server, able to run on a virtual machine.	
AixpertSoft GmbH	Traditional 3-tier architecture. Oracle for data management and modelling in database-tier (tier 1), authentication, propagation and processing of the server functionality in the web application server (JBOSS/Tomcat in tier 2) and user interface web browser and Java GUI (tier 3). Scaling is possible on all levels.	Oracle 11g (minimum requirement 11.2.0.3), in future also Oracle12c	Yes	Components are based on component meta-classes. These are defined for specific object classes and enriched with specific attributes. Adaptations to the class and relational model can be undertaken. Additional objects (so-called "post its") can be created.	■ Windows, ■ Linux, ■ Unix (for DB, servers and clients)	
AT+C EDV GmbH	AT+C VM.7 is implemented with or without CAD connection in a 2-tier architecture, with the application server in a 3-tier solution.	■ Oracle or ■ Microsoft SQL Server	Yes	Yes	Windows 7, 8, Server 2008 R2, Server 2012	
CA Technologies		Company / client confidential, databases are embedded	Yes	Yes	■ Linux, ■ Windows for Clients	
COFELY Deutschland GmbH	The AXI.COS-DCIM is a customer-specific system solution, which can be altered according to requirements.					
Cormant, Inc.	Windows server based server architecture, using MS SQL as the backend database. Separate server processes are used for various functions and can be distributed. The web front end that runs on clients including Windows, Linux, Mac and Tablets, as well as a Windows PC client for administration. Both use the server side modules to limit client side processing. Offline mobile devices synchronize with the server from time-to-time using WiFi or cradle access.	Microsoft SQL	Yes	Yes	For the web: ■ nearly any OS is supported. For the client: ■ Windows XP, ■ Vista, W7 and W8 The back end supports: ■ Windows server 2008 and above.	
DataCenterVision S.A.	Client-server architecture, fully portable to any environment.	We support ALL SQL engines	Yes	Yes	■ Server: any OS supported by the SQL engine. ■ Client: any OS supported by the web browser.	

	Available Interfaces	Available Import/Export Formats	Connectors to	How do you support customers in the development of further connectors?	User Administration
	pls see attached "ABB Decathlon Supported Protocols.pdf" (see http://search-ext.abb.com/library/Download.aspx?DocumentID=3BSE073636&LanguageCode=en&DocumentPartId=&Action=Launch)	■ XLS, ■ XML, ■ PDF, ■ CSV, ■ TXT	A wide range of external or 3rd party solutions can be connected using OPC, OPC DA, OPC HDA, OPC AE, SNMP, IPMI, iLO, DRAC, DCMI, UCS XML.	Yes	Decathlon provides internal access controls for security and authentication and supports authentication systems like LDAP and AD
	Using the Integration Engine (ETL) and Java API, all interfaces can be realized. The following system groups have already been integrated: ITSM and workflow systems, telephone systems, discovery and inventory systems, SAP, other CMDBs, databases, monitoring and network management, management systems from individual manufacturers (Cisco, HP, IBM, ...), log files, LDAP and AD, Kerberos, SNMP, DDI, and many others.	Almost any (the ODA connector for the Integration Engine alone contains 150 formats, e.g. .csv, ASCII, XML, LDAP, JDBC/ODBC,....).	BMC connector (Atrium, Remedy or ITSM Suite, ADDM), IBM (CCMDB, Tivoli, TADDM), Nagios, HP and CA on request, JDISC, BDNA, Cisco.	The customer can either independently develop their own connectors, with appropriate training, on the basis of the Integration Engine Designer, or have them developed through AixpertSoft (or the partner ComConsult Kommunikationstechnik GmbH).	AixBOMS has its own, well-established user administration (with groups, roles and users), which can be used to assign user rights assign down to attribute and functional levels. Not only class-specific, but also organization-specific or ownership-specific concepts have been realized for customers. Integration with LDAP, AD and other single sign-on systems have also been implemented.
	■ XML, ■ .NET	■ Excel, ■ Text, ■ Datenbank, ■ Visio, ■ AutoCAD	■ TKM FuturePatch, ■ HP Open View, ■ Ingrada, ■ NetXpose, ■ Cisco Works, ■ NeDi ■ HP AssetManager ■ SNMP ■ WMI ■ SAP	Customers can develop in-house solutions on the AT+C VM.7 API.	User rights can be assigned according to the class structure of AT+C VM.7.
	Most standard interfaces, web based, client based, tablet based, alerting into standard formats etc..	Many formats such as Excel are supported.	Many standard protocols like Modbus, BacNet, SNMP, EnergyWise and more are supported.	Customers are able to request connectors through CA Support or CA Services.	Extensive yet simple web based.
	A full read/write XML API is avaliable.	PDF, AutoCAD, Visio, BMP, JPG for drawings. CSV/XLS for data imports and CSV, XML, XLS, DOC, PDF for exports.	ServerNOW, ServiceDesk Express, SAP financials, VMware ESX, Server Technologies SPI appliance.	The API is fully published if the customer wishes to build their own connectors. Cormant can also be contracted to build conenctions for customers or work with them.	Administration can confine a user by area (location), function(s), data types and roles. Integration with AD is possible.
	Full web client: Google Chrome, Microsoft IE, FireFox Safari, etc..	■ Import: our own format ■ Export: XML, HTML, CSV	Easy connection through the web services & SOAP.	We support them all.	The super-administrator of the database may create all profile, and define the rights.

Company	System Architecture	What database is the system based on?	Is the structure of the database disclosed?	Is there a unified database for all components?	Supported Operating Systems	
Emerson Network Power	The *Trellis*™ platform services are the brains of the *Trellis*™ suite. All communication and processing between endpoint devices and application user interface pass through the platform services. The *Trellis*™ platform services are responsible for ensuring that all *Trellis*™ components are properly secured and accessible by all authorized parties and functions within the suite. The *Trellis*™ Intelligence Engine (TIE) is the 'secret sauce' of the *Trellis*™ platform. TIE resides on every model of the Avocent Universal Management Gateway (UMG). This means that the TIE is the core communication between the UMG and the rest of the *Trellis*™ suite. *Trellis*™ element libraries are responsible for defining the communication protocols used to communicate with endpoint devices, data points to be monitored, and for sending control commands to endpoint devices. *Trellis*™ element libraries communicate via the following protocols: ■ Modbus ■ BACnet ■ SNMP ■ Velocity	Oracle Database Enterprise Edition Version 11.2.0.1.0	No. The database is an embedded database with a private schema.	A single Oracle Database server is used for all components and there are multiple database instances inside that single database server (e.g. Data Model, Time Series, MetaData store, etc.).	■ RedHat Linux 5.9, 6.4 ■ Windows 2008 R2	
FieldView Solutions	Web application. Requires no client software installation. Distributed polling services. "Mothership" can consolidate data across myriad locations.		SQL	Yes, DataView™	Microsoft.net web App. Browser access from any operating system.	
FNT GmbH	The FNT Command® solution is designed as a 3-tier architectured software. The client tier uses a standard web browser. The application tier implements the entire business logic and the webservices for client communication in an application server.	Oracel database	Yes. For easy access, also an abstrac view in form of a metaschema is provided.	Yes	■ Windows 2000 SP4, ■ Windows XP SP2, ■ Windows Vista Business or Ultimate, ■ Windows 7, ■ Windows 8, ■ Linux (generally all current Linux distributions), ■ MacOSX; ■ Solaris and AIX on request.	
IMS GmbH	IMSWARE can be implemented as a web application and also as a Client-Server application.	Oracle from Version 11	Yes	Yes	Data base server: All enabled Oracle platforms Web-Client: Browser Client: Windows 7/8 Smartphone:iOS, Android, WindowsPhone.	

	Available Interfaces	Available Import/Export Formats	Connectors to	How do you support customers in the development of further connectors?	User Administration
	SOAP Web services are available for two way asset synchronization.	CSV	■ IBM SCCD ■ HP Asset Manager	Customer may use the API guide and engage professional services.	*Trellis*™ support internal and external authentication. Users can be imported from an external LDAP Server and assigned authorization rights.
	Browser – access from any browser.	Modbus RTU, RS-485, Modbus TCP, SNMP, OPC, XML, SOAP, BACnet	Interoperates with just about any other system found in a data center. Vendor Neutral.	Broadest range of connectors available. Do not charge extra for connectors.	Full suite of user tools and FieldView Professional services.
	Auto Disovery Gateway, GIS Gateway, Webservice API. In addtition the FNT Staging Area is available offering customers the possibility to design interface on their own.	■ Excel, ■ CSV, ■ PDF, ■ XML, ■ PNG, ■ JPG, ■ GIF	■ Cisco Works/Prime, ■ Visio Interface, ■ Telephone System Gateway, ■ HiPath Management Interface, ■ Alcatel TK Interface, ■ vmware vCenter, ■ Microsoft SCCM	Various in-house and on-site training offerings are available.	FNT Command provides a special program section for managing the access rights of the users ("Access Management" component). The access rights can thus be defined in detail in different areas based on the provided multi tenant concept.
	The open conception of IMSWARE guarantees the highest level of security and flexibility and offers a range of technologies (WebServices, XML, SNMP, DB-Link, ODBC, ASCII etc.) to tether external systems online or using batch.	■ DWG, ■ DGN, ■ IFC/xml, ■ DXF, ■ CSV, ■ HTML, ■ XML, ■ PDF etc.	■ Office systems (Word, Excel, Project...) ■ Groupware systems (Outlook, Notes...) ■ ERP and CRM systems ■ GIS geographical information systems ■ Barcode systems ■ GLT building control systems TKA management systems ■ NMS network management systems ■ LDAP	On the basis of workshops, agreements are reached about the range of functions for the interface to the customer system. The paramatization of the interface for IMSWARE is done by IMS on the basis of the requirements; if necessary, special functions are developed.	User profiles are easy for the administrator to create and change using Drag&Drop. With this, profiles for rights are created (view, processing, Erfassung , client and module) for the respective user groups. Any number of profiles can be created, so that the allocation of rights is possible according to organizational groups and roles, at the staff level, and according to function and content.

Company	System Architecture	What database is the system based on?	Is the structure of the database disclosed?	Is there a unified database for all components?	Supported Operating Systems	
iTRACS, a CommScope Company	Standard 3-tier client-server architecture – for end users, we provide 3 interfaces (they can use any and all however they'd like) – HTML Web Browser, iPad app (mobility!), and Windows Client for today's power users.	SyBase SQL, run-time DB, licensing is included.	Yes	Yes	Windows-based application; Browser is supported on IE, Firefox, Chrome, and Safari.	
OSL Gesellschaft für offene Systemlösungen mbH	The system architecture corresponds to a client-server structure.	Proprietary	No	Through the proprietary Cluster Database (CCF), there is a unified database for all components available, and this allows rapid and simple replacement of hardware.	For the operative environment, Solaris and Linus are used. Within the virtual machines, all important operating systems can be installed.	
Panduit	Software: Distributed Architecture – HTML5 based UI, PIM Applica-tion Server and PIM Agent and Database. The web-based Application uses a 3-tier architecture and is J2EE compliant. The use of HTML5 is not supported by many other providers, and is a plus point for the customer.	Microsoft SQL, Relational Database.	Yes	Yes	Windows. Web based client – asset tracking functionality can run on mobile platforms, with support for Mobile Safari 7 on iOS 7 and Chrome for Android 4.0.	

	Available Interfaces	Available Import/Export Formats	Connectors to	How do you support customers in the development of further connectors?	User Administration
	■ HTML Browser, ■ Windows Client ■ iPad App	■ Excel, ■ CSV, ■ PDF, ■ various graphical image formats	The DCIM Open Exchange Framework™ is the information highway that connects all outside data sources, systems, and workflows to the iTRACS suite, allowing for the seamless bi-directional exchange of information. Using this framework technology, iTRACS' extensible systems management environment 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 DCIM Open Exchange Framework accelerate the openness within the physical layer that's been enjoyed at the logical layer for years. This is at the heart of our Open Platform approach and is the engine that facilitates such rapid, easy-to-execute integrations.	The DCIM Open Exchange Framework's two-way data exchange creates a true win-win: ■ The iTRACS DCIM ecosystem is enriched with new streams of operational and other data. ■ Customer's business systems and workflows are enriched by pulling information from iTRACS back into their environments also. ■ Take a close look at the ourDCIM™ Developer Community lauched in December 2013. We now have more than 120 registered members from all walks of life seeking to collaborate with iTRACS to advance the DCIM agenda – software vendors, systems integrators, partners, customers, consultants. etc. The our DCIM™ Developer Community is an open, global developer community designed to: ■ Facilitate and nourish self-enabled integrations with the iTRACS CPIM platform by outside Partners, vendors, customers, and other stakeholders interested in joining the CPIM ecosystem. ■ Facilitate the bi-directional exchange of information between DCIM, ITSM, IT, Facilities, BMS, energy management, and other enterprise systems. ■ Expand the coverage of DCIM, providing customers with a truly holistic approach to infrastructure management across both IT and Facilities. ■ Drive continued innovations in performance and business value for iTRACS customers. ■ Expand the iTRACS CPIM® universe with more integrations broadening the coverage and capabilities of our platform.	A complete suite of user tools, administrative capabilities, and role-based security safeguards (user restrictions) are available with iTRACS CPIM®.
		For import/export, proprietary formats are available in cleartext.	The connection of back-up software is supported.	There is support for individual projects.	User administration is handled using the OSL UVS. Alternatively, external user administration (UNIX pam) is possible.
	Documented Application Programming Interface Enables integration of SmartZone™ Software Suite with third-party NMS programs while leveraging familiar applications and interfaces. This brings added value to NMS systems without requiring significant custom software development or learning curves. SmartZoneTM Software can integrate with SmartZoneTM and third party hardware using a number of protocols.	Excel. A 'data mover' functionality allows SmartZone™ Software to exchange data with third-party systems through a data mapping methodology.	■ Ayanova, ■ Microsoft SCOM, ■ BMC Remedy, ■ IBM/Tivoli	SmartZone™ software is capable of integrating with other systems; it is designed to be able to complement and exchange information with other solutions as well as operating independently. The software is already integrated with IBM/Tivoli, BMC Remedy, Ayanova, and Microsoft SCOM, and customers can work with Panduit Professional Services to enable integration with other systems. Panduit also responds to customer requirements by adding customer-requested integrations to the product roadmap, in addition to those decided on as part of the product strategy.	Manual, Active Directory Integration, and Role based security. System admin allows the network administrator to define user groups, set permission levels and user preferences. This makes it possible to restrict access where necessary, and customize the interface for more efficient and secure operations.

Company	System Architecture	What database is the system based on?	Is the structure of the database disclosed?	Is there a unified database for all components?	Supported Operating Systems	
Rackwise Inc.	Rackwise DCiM X is a software DCIM application solution comprised of database, application, web, monitoring, and reporting application layers. Rackwise currently leverages the Microsoft architecture stack which ensures resilent operation, minimal system administration requirements, and massive scalability model. Rackwise DCiM X may be deployed on either a dedicate server architecture, or virtual machine architecture meeting the minimum specifications, or via our Cloud SaaS environment whereby Rackwise hosts the solution as a subscription. Rackwise reviews the user, reporting, monitoring, and modeling requirements with each customer to recommend an appropriately sized platform for their environment. However, most customers, including those with multiple facilities, can be deployed on a single server. Further, many customer have existing centrally managed Microsoft SQL database architectures which may be leveraged to further reduce the on-premise system architecture requirements. The Rackwise real-time monitoring architecture scales massively in order to meet the security constraints and aggregation needs that exist within many enterprise customer environements. The massively scalable monitoring architecture provides a platform for monitoring servers to be placed at strategic points within the customers location hierachy and act as "store-and-forward" appliances that report back to the centralized Rackwise DCiM X monitoring service. Each user is autheticated internally by the Rackwise DCiM X system, or they may be authenticated via their LDAP deployment (Active Directory, and others meeting LDAP standards).	The database for Rackwise DCiM X is based on Microsoft SQL Server 2008 or SQL Server 2012 (Standard Editions) with Microsoft SQL Server Reporting Services (SSRS) for Rackwise reports and report authoring.	No. The database schema design for Rackwise DCiM X is proprietary. However, the architecture is considered an open architecture made available to customers for customizations, custom data properties, and custom reports via "Rackwise Dataviews", which serve to protect a customer's integrations or customizations when Rackwise updates our software and potentially the database schema.	Yes	The Rackwise DCiM X server operates on a Microsoft architecture based on Microsoft SQL Server 2008 or 2012 R2. The Rackwise SmartClient is a component that is installed on the user's desktop computer which provides an intelligent interface via their Microsoft Excel and Microsoft Visio applications into Rackwise DCiM X. This allows the user to log into Rackwise DCiM X via their Visio or Excel application on their desktop and perform their work. All other access to the Rackwise DCiM X server is made via web browser.	
Raritan Deutschland GmbH	Highly scalable secure modern modular architecture. Web Server, SQL Database and OS.	SQL	Yes	Yes	■ Linux ■ Windows	
Schneider Electric GmbH	The modularized scalable architecture of StruxureWare for Datacenters includes enhancement options, product modules and an user-optimized operation platform. The open and flexible architecture can be adapted to changing demands.	StruxureWare for Datacenters has a Cloud Genome library where thousands of products are included that contain all info. ■ Postgre SQL Database	on special demand	Yes	the software runs in a virtual machine	
speedikon Facility Management AG	Data base oriented; the system can be customized to the specific customer needs by means of configuration settings.	■ MS SQL, ■ Oracle and ■ DB2	Yes	Yes	■ Windows ■ Linux	
TKM – Telekommunikation und Elektronik GmbH	Client Server.	■ MS SQL ■ mySQL	No	No	WinXP SP3, Vista, Win7, Win8 Windows Server 2003, 2008, 2011	

	Available Interfaces	Available Import/Export Formats	Connectors to	How do you support customers in the development of further connectors?	User Administration
	Rackwise web portal where visualizaitons, searches, reporting, and what-if analysis takes place. Rackwise SmartClient provides user interface to their desktop via plugin to Microsoft Visio and Microsoft Excel that enables the user to log into Rackwise DCiM X via Visio or Excel to edit floorplans, revise rack elevations and thresholds, and perform moves, adds, changes, and deletions to equipment in the model (with visualized feedback).	Rackwise DCiM X supports several import and export formats including excel-based import and export for the entire Rackwise DCiM X data fields including any custom properties added to the system. This capability is used most often for initial data import, but also for performing mass changes at any locations including mass moves, mass edits for adding additional properties, etc. Additionally, Rackwise supports data integrations between disparate systems databases (ie: asset data repository and Rackwise DCiM X).	Rackwise offers its Integration Connector license that includes dataview and data field documentation, web-services, and development codebase which accelerates the time and work required to complete an intergration between any system (that provides defined database elements), and Rackwise DCiM X. This integration connector as been proven with successful intregrations with BMC (Orchestrator, Atrium ITIL), ServiceNow, and others.	In conjunction with offering the Rackwise DCiM X Integration codebase license, Rackwise engages with customers through Discovery consulting engagements to map customer integration requirements, CI data field requirements, source of record authority, and determine architectural approaches, for which there are many, and provide best-practices and subject expertise from previous integration experiences to develop an integration execution plan and work statement that ensures integration success. The Discovery engagements are performed against commercial target systems as well homegrown customers systems. Once the Discovery engagement is completed, Rackwise provides the detailed execution plan and schedule for execution. This approach has proven successful for ensuring well defined approach and overall integration project success. Additionally, as Rackwise encounters other commercial system integration projects, we expand the codebase intellectual property to include those solutions so to benefit all customers.	Rackwise DCiM X provides a simplified approach for administering users of the system. Within the Rackwise web portal, those with administrator priviledge can add new users by username, email address, contact information, and selection of the user's role within the system based on Rackwise application roles based access controls, as well as managed/freeing locks and stuck jobs in the event these should occur. Additionally, administrators of the system can import, create, archives and remove Solutions (Rackwise's terminology for enterprise hierarchy of multiple locations). Furthermore, administrators have access to configure LDAP for user authentication to the enterprise's centralized user management systems (Active Directory, or other LDAP compliant systems. Administrators can also access and update the Rackwise license file to update with additionally purchased user licenses.
	■ Snmp, ■ Modbus, ■ Bacnet, ■ ODBC, ■ OPC and ■ Web Service	■ SQL, ■ CSV, ■ Web Service	Yes, Many such as BMC, LanDesk, Johnson Controls BMS, OPC over 20 power and environemental monitoring systems.	We have a fully staffed professional services team.	Support for Active Directory and LDAP.
	StruxureWare Data Center Expert and StruxureWare Data Center Operation are open systems, and offer integrations across a broad range of applications. The opportunities for integrations are constantly expanded through open application programming interfaces (APIs).	All data can be imported and exported, from Excel to AutoCAD, visio, API's etc. it's inumerous the capability of it.	Integration with VMWARE, BMC remedy, Microsoft, Cisco, along with the use of Intel technology.	understanding connectors as existing components or interfaces, the sytem will automatically recognize , if not an integration is possible to be done, via a service	Main user, that has the posibility to delegate the actions and ownership, along with privileges.
	Open interfaces, web services	■ DWG, ■ SVG, ■ ASCII	Connectors can be configured.	Connectors can also be configured by the customer.	Users are allocated profiles.
	.NET based WCF interface called openCONNECTOR.	■ CSV ■ SQL Format	Products of software partners e.g. VM.7 and others.	With development documentation: source code examples, interface examples, 3rd Level Support.	With multiple levels of rights.

Company	System Architecture	What database is the system based on?	Is the structure of the database disclosed?	Is there a unified database for all components?	Supported Operating Systems	
tripunkt GmbH	Pathfinder is a Windows client, capable of multiple users, with inte-grated rights system, porta-ble and visualizable. The client connects directly with a rela-tional data base. An application server is not nec-essary. Stan-dard DBMS are supported. Pathfinder mobile is an Android client (IOS is planned), synchro-nizing the data using a REST interface with a server applica-tion, and holds it in an internal data base. This corresponds to an offline documentation of the data center.	■ Oracle (Express) from v9i ■ Microsoft SQL Server (Express) from 2005 ■ PostgreSQL from 9.1 ■ MySQL from v5 ■ MariaDB from v5 ■ FireBird ■ SQLite	Yes	All relevant data are, without exception, saved in the data base and administered. The consistency of the data is ensured through transaction checks.	System requirements Pathfinder Client ■ Microsoft® Windows® XP (32 Bit), Windows Server® 2003 (32 Bit), Windows Server 2008 (32 Bit), Win-dows Vista® (32 Bit), Win-dows 7 (32 Bit und 64 Bit), Windows 8 (32 Bit und 64 Bit) ■ 2 GB RAM (4 GB recom-mended) ■ 500 MB free hard drive space ■ Monitor resolution 1,024 x 768 with True Color (1,600 x 1,050 True Color or higher recommended) ■ (.NET-Framework 3.5) ■ virtualizable ■ terminal server capable ■ No installation e.g. for por-table use (e.g. USB-Stick) or network drive necessary ■ No software components from external producers necessary ■ Limited writing rights possi-ble for program directory System requirements Path-finder mobile ■ Android 4.1 or newer ■ Resolution WVGA (480x800) or higher ■ CPU from 1 GHz (DualCore processor recommended) ■ Camera (for barcode sup-port) ■ NFC (to read/write RFID/ NFC tags) System requirements Path-finder Server ■ Microsoft Windows Server 2008 (32 Bit), Windows Server® 2013 (32 Bit und 64 Bit) ■ 500 MB free hard drive space ■ .NET-Framework 4.5	

	Available Interfaces	Available Import/Export Formats	Connectors to	How do you support customers in the development of further connectors?	User Administration
	Pathfinder offers an SQL interface to tether remote data bases.	Pathfinder offers the user an interface for import/export of assets and network data in csv format. An interface to active network management systems is planned for 2014.		The customers can access the disclosed data base structure with their own developments. In addition, we offer individual adapta-tions/expansions as a service, according to agreements.	Pathfinder has a functional rights system on the basis of groups and users, which indicates increments from full access (administrator) through to read-only rights. Users are authenticated through login and password.

Technical Details
Part 2

Company	Is the system able to support multiple clients?	User Interface	How can customer-specific customization be undertaken?	Can the data be used and maintained offline?	Supported Languages	
					English	German
ABB	Yes	Fully customisable with high-performance, sub-second real-time graphics and visualisation for operating environments and web-client (e.g. HTML5) access for reports, dashboards, portals etc..	At every level of the system from individual devices to enterprise-wide dashboards and operational environments.	Yes	Yes	Yes
AixpertSoft GmbH	Yes	The principle of "single sourcing" applies. The uniformly designed interfaces are available both in the web browser and as a Java GUI (Navigator). The Navigator is designed to support every user type. Multi window technology is used to generate a wide range of views. This includes tree diagrams, table views (including bulk processing mode), dashboards, reports, and a large range of graphical visualization tools (context-dependent). Drag&Drop operations are possible between windows. Standard forms are equipped with attribute sets which have grown historically, and are divided into sections. Topics related to specific modules are placed on corresponding tabs. Graphics can be edited which provides simplified data maintenance via Drag&Drop. Ergonomics teams regularly undertake use-case oriented reviews and quality checks. The handling of data is simplified by the use of favorites and several search mechanisms.	Using the AixBOMS Development Suite (design tools). In the customer repository, a custom path is generated. Here, all changes made to mask sets, reporting, functional layer, data model, etc. are stored. Through this, the complete system remains updatable (patches, service packs) and "customized" environments can always install and use updates and new functionality provided by the manufacturer, with little risk. Given appropriate training, the customer can undertake their own developing. All components in the Development Suite make use of a graphical user interface.	Yes	Yes	Yes
AT+C EDV GmbH	Yes	Intuitive handling using Drag&-Drop, individually configurable attribute dialog.	The user can adapt the data structure to requirements using the structure editor provided.	Individual distribution points, their components and their connections, can be can be turned on and off via a mobile device.	Yes	Yes

	Search and Filter Functions	Visualization Possibilities	Logging	Further Information
further				
■ French ■ Spanish ■ Swedish ■ Russian ■ Chinese ■ Arabic	From alarms to asset lists to reports.	Fully customisable with high-performance, sub-second real-time graphics and visualisation for operating environments and web-client (e.g. HTML5) access for reports, dashboards, portals etc..	Real-time data storage, compression, aggregation, user defined calculations, and data retrieval. Real-time data storage not only stores the actual data point but also pairs its data quality code, engineering units, and collection timestamp with the data point records.	The Decathlon software platform is based on the Industrial process Control System "Industrial IT System 800xA" with more than 10,000 applications in critical faciliites globaly. The main technical features and capability were inherited by Decathlon and thus represent a standard set of tools for each data center application, such as: an integrated operating and engineering platform, real-time capability, connectivity, alarm management, tracking&tracing, industrial high performace-HMI, more specialized automation products for enterprise applications and much more (see http://search-ext.abb.com/library/Download.aspx?DocumentID=9AKK106103A1791&LanguageCode=en&DocumentPartId=&Action=Launch).
	"Filter lines" in tables, "complex filtering" (Boolean operations), "form search" (quick search in tree diagrams and masks), "smart search" (search for selected relationships in graphical editors with graphic display of results), "object search" (in assistants, tables and graphics).	A graphics framework developed in-house (on the basis of Eclipse GMF) visualizes relationships between objects from the data set in the database ("generated graphics"). These are prepared for particular modules (configuration, network, rack view, service view, addresses (IP), switching paths, cable structure, impact,...) and equipped with graphical icons (default from the manufacturer, customer-specific icons are possible). All graphics with a relationship to geographical information (maps, infrastructure editors, site and floor plans, areas plans), incl. exact placing of items, are updated via user interaction (Drag&Drop of objects). In principle, all data areas (and object relationships), queries and content can be visualized. Generally, "number of object levels" (for nested objects), "zoom", "align" (circular, orthogonal left to right, orthogonal up to down, linear) and editing options are available. For rack views, photo-realistic or generic (generated by the system) icons may be used. Runtime screenshots can be created for all system graphics (exported as an image file or alternatively stored with the data object in the database).	The technical system history makes use of a mechanism called "History Logger". This contains over 300 individual aspects which can be activated for the system history (e.g. generate log file entry if in one particular field one particular change is made or validated by a user or an interface). In the default setting, all object changes are logged for basic attributes and object relations. Time stamp, type of change, value and user_ID are stored. External data from interfaces are provided with EAI keys (ID of the data set in the external system), source, interface, date of update, type (update, insert, delete) and original value. The Integration Engine writes the system log file (sys-tem log, delta log, loader log). Changes of status (for life-cycle anal-yses) are stored separately. Log file entries are written by users and systems and are inherited by subordinate hierarchies (components, locations, organizations).	As an underlying principle, Aix-BOMS is being developed with an awareness for supporting user scenarios from "very simple" through to "extremely complex". With this in mind, often multiple system mechanisms which are successively based on each other will be available for all system areas (incl. technical). As an example, the operating environment can be implemented from a simple Windows server all the way to an environment which is scaled at all levels (database clusters using Oracle DataGuard, multiple Aix-BOMS servers with load balancers/clusters and multiple client environments). This principle can be found at all technical system levels.
■ French ■ Italian ■ Kanji ■ Korean ■ Russian	Filters are possible for all data base attributes.	Visualization of the floor plans, blinking of objects in the floor plan, graphic analysis of any KPI's in the floor plan, cabinet view front/rear and cross-sectional, cabinet rows, network plans, network spider diagrams, components in CAD or bitmap graphics, visualization of the state of port circuits, schematic diagram of the connection data.	Logging occurs through transaction logging and historicization.	

Company	Is the system able to support multiple clients?	User Interface	How can customer-specific customization be undertaken?	Can the data be used and maintained offline?	Supported Languages	
					English	German
CA Technologies	Yes	Web based, client based, tablet based, alerting into standard formats etc..	CA DCIM is a commercial off the shelf product that is configured to meet the clients needs.	Data can be exported and imported	Yes	Yes
COFELY Deutschland GmbH					Yes	Yes
Cormant, Inc.	Yes	Web or client based.	It is fully configurable and system-agnostic. It fits for all customer needs.	Yes	Yes	No
DataCenterVision S.A.	Yes	Web based client.	The database can be easily configured by the customer	No	Yes	Yes
Emerson Network Power	The primary clients are a Web Browser, and Mobile client.	Web based UI.	User defined properties are available to extend the system per customer requirements. These are done at runtime and are considered configurations rather than customizations.	Yes	Yes	No
FieldView Solutions	Yes	Browsers. No client software required.	By contract with FieldView	Yes	Yes	Yes
FNT GmbH	Yes	Web-base (web browser).	FNT Commands Entity Manager module offers dynamic extentions (parameters of text or numeric values, complex fields such as checkboxes, e-mail or IP addresses or even validation fields using regular expressions and special procedures). Advanced modelling of new entities (resources) without restriction and new relations for the extension of the data base model are provided. Subtyping of designed classes is supported.	Yes. (Some restrictions apply.)	Yes	Yes
IMS GmbH	Yes	IMSWARE has a unified user surface for all modules; handling is based on standard concepts as known to users in the Windows environment. ■ Windows ■ Menus ■ Toolbar ■ Drag&Drop function ■ Right mouse button ■ Shortcuts ■ Assignment of control keys In addition, of course, pure keyboard use is possible.	The IMSWARE concept allows the adaptation of masks and data models within the context of customization. Over the user surface, during the run-time of the system, the data models (clas-ses/attributes/relationships etc.) and the masks and dialogs can be designed freely. Data fields like e.g. text fields, date fields, catalogs, indexes etc. can be placed in the mask using Drag&Drop and given corresponding characteristics (obligatory, pre-set). Adaptation is possible without parametization.	Yes, IMSWARE offers suitable mobile solutions for this (PDA, Tablet, Smartphone etc.)	Yes	Yes

	further	Search and Filter Functions	Visualization Possibilities	Logging	Further Information
	■ French ■ Spanish ■ Portuguese ■ simplified Chinese	These are embedded into the product.	3D, 2D	All actions are logged.	www.ca.com/fr/products/detail/ca-dcim.aspx
		An unlimited range of filter functions are avaliable around the search option. A quick search function queries all data.	Rack views, plan views (including overlayed rack data), rack rows, historical and point-in-time data. Connection data is visualized in a tree structure and can support connections and ‚next hope' connections (say via an electrical breaker panel or switch) to an unlimited depth.	All actions on all platforms are logged in a read-only table for display.	Not specified.
	■ French	Powerfull engine for queries.	Floormap, all devices, racks (front & back), rows (front & back), connections / links / circuits, and all inventories	Secured login.	No limitation in number of devices, hardware resources and pieces of equipment.
	■ Chines ■ Japanese ■ Brazilian Portuguese	Inventory search, device catalog search, and capacity search.	Device views, graphical floor plan views	All *Trellis*™ system components create log files as well as audit events are generated for user operations	Not specified.
	■ Chinese ■ Japanese ■ German ■ Portugese ■ Spanish	Full Boolean search and filters.	More than 30 standard reports and dashboards plus customization available.	Handled by highly scalable polling engine.	Not specified.
	■ Russian ■ Spanish	The FNT Command CI Management offers configurable search criteria capabilities, where search cirterias can be defined saved as the user's personal search or offered for other users. Searches can be defined over all CI classes with restriction for fields (attributes) linked with operators. The CI classes to be used for the search can also be predefined for keyword searches.	Connections / attached cables and their related objects as well as other supplementary information, such as type, ID and location, can be loaded and positioned and the view stored as required on net spiders. For different connection types (for example fibre optic cables, copper cables, etc.), the line type and color representation can be defined. For the representation of the logical view FNT Commands Service Browser provides information, depending on the requirement, for a wide range of areas in a company. The inter-layer representation of the IT infrastructure allows the required information to be presented clearly and visualized individually. The Service Browser offers the complete management and documentation of services.	FNT Command offers configurable historiography of objects and attributes in an extra program section, where all changes (date, location, attributes, links, etc.) are logged with a history function (user, date and time, type of change). Additionally a logbook function provides the option to store external events (incidents, changes, system states from the network management, etc.) manually or via interfaces.	Not specified.
	■ French ■ Italian	There is an object search available in IMSWARE for the search of any objects in the data base. The search can be untertaken using a variety of criteria (classes/types, attribute/attribute value, matchcode search etc.), and in addition further searching is possible of the initial search results. Also, any search and filter criteria can be entered for all tables and processes, so that the object searched for can be rapidly localized.	Cabinet-view with front and back view, CAD plans of areas, the visualization of results in the graphics (e.g. cabinet view, floor plan, general layout plans) can be colour-coded (e.g. ports in use/free/reserved, cabinets with low/middle/high capacity for climate control, power, occupancy rate, etc.).	For logging, there is the function of security logging (users logged-in, accessing of data etc.); furthermore, all changes to data can be entered into the history.	Not specified.

Company	Is the system able to support multiple clients?	User Interface	How can customer-specific customization be undertaken?	Can the data be used and maintained offline?	Supported Languages	
					English	German
iTRACS, a CommScope Company	Yes	HTML 5 Web Browser, Windows Workstation Client, and iPad Mobile App.	iTRACS CPIM can quickly be customized to meet the needs and expectations of the user team around how they would like to visualize, understand, manage, and optimize their IT and Facilities infrastructure. The CPIM platform is flexible and extendable so users can configure the solution to align with their business requirements without having to do unique "custom code."	Users can import and export data to update systems.	Yes	No
OSL Gesellschaft für offene Systemlösungen mbH	Yes	Simple and central administration of all components is possible using the Command Line Interface (CLI) or curses. In the future, a browser-based surface will be available in parallel to these.	Customer-specific customization is not offered for the OSL Unified Virtualisation Environment software.	No	Yes	No
Panduit	Yes	HTML5 / Browser based. A streamlined design brings all functionality together under an intuitive, platform-independent view with consistent navigation and clear, easy to read screens using HTML5 and Java with real-time updating. Current activities / views are visible in color coded tabs, together with user-defined ‚Quick Links' tabs in addition to interface features. The easy-to-use interface encourages all necessary parties within an organization to quickly access and utilize the applicable software features and consolidated databank – improving efficiency, productivity and user satisfaction.	SmartZone™ software is capable of becoming part of any standard workflow processes via rich, Restful API. This has been demonstrated via examples of integrations with BMC and Ayanova. The reporting and dashboarding structure enables information to be displayed in a customized manner for the user. Also, there are various configurable settings that can be tailored to the users preferences including asset information data collected and refresh rates of data collection.	While data can be easily exported for use at any time, an active link is required to make changes to the data center model.	Yes	No

	Search and Filter Functions	Visualization Possibilities	Logging	Further Information
further				
In the roadmap.	User can search on virtually LIMITLESS sets of data points – CPIM can let you input and output any data points you want. Search on any aspect of the infrastructure, run reports, view dashboards, etc. – it's INFORMATION at your fingertips across both IT and Facilities.	Interactive 3D Visualization – The Efficiency Engine™ is the world's first and only holistic view of the data center using an interactive, navigable 3D environment that lets you point-and-click through the entire physical infrastructure. Our living, breathing 3D model gives you a rich understanding of – and control over – the complex web of interrelationships that exist between assets. And unleashes new opportunities to create efficiency and business value in the design, management, and optimization of the data center and other complex interconnected infrastructure. Do NOT be fooled by other "want to be" products proclaiming visualization when all you're doing is switching between dashboards, static 3D images, or fragmented views into limited data sets. iTRACS is a holistic, context-rich, NAVIGABLE REAL-TIME 3D model that gives you immediately actionable visibility into – and control over – the complex interrelationships that drive your physical infrastructure.	We log all changes and note the time and user; we include robust logging for all integrations for a complete logging solution.	Not specified.
	Using the forthcoming browser-based surface, VMs, storage and networks can be searched for and filtered.	In a future version, the visualization of storage use, capacity of the nodes, and the processor load of the VMs is planned.	In the OSL UVE, all commands are written as log files with date and time.	Not specified.
■ Chinese ■ Korean ■ Spanish ■ Portuguese ■ Russian ■ Japanese	SmartZoneTM software provides information to show you where you are working within the Location Tree. You can "pin" relevant items for easier navigation to common destinations. Quick Drop-Down Search Filtering allows you to start typing the name of an item / device and begin filtering all results as you type to speed up search capabilities, and a Web-Type Search Capability allows you to search for devices and information covering all functional areas and obtain results in a manner similar to browser searches on popular web-search platforms. Results are filtered into groups (location, rack, device, etc.). A notable, separate capability is the Stranded Capacity search – to identify and reclaim capacity lost due to a lack of, or inefficient use of, one or more vital resources.	Elaborate view of data center representation including locations, buildings, floors, floor plans, rack elevations. Floor plans provide an interactive top-view of the data center, enhanced with graphical representation of infrastructure capacity and health metrics. Visualization of each individual rack and device allows the user to see exactly what is present.	The software utilizes an events module that logs all MAC operations, in addition to the general diagnostic logging mechanism.	Panduit SmartZone™ Software is complemented by a full range of SmartZone™ hardware and gateways. The power of the SmartZone™ Solutions lies in the ability to provide Intelligent DCIM, instrumenting all zones of a facility to provide real-time information that can be utilized to make operational decisions. The software is also compatible with third party devices, with the capacity to communitcate via the following protocols: ■ SNMP v1/v2/v3 ■ WBEM (CIM-XML and WS-Management) ■ SMTP – For forwarding event ■ CDP (Cisco Discovery Protocol). This compatibility allows complete flexibility for legacy data center operators, who may want to deploy SmartZone™ alongside existing tools. The software can run in a virtual/clustered environment

Company	Is the system able to support multiple clients?	User Interface	How can customer-specific customization be undertaken?	Can the data be used and maintained offline?	Supported Languages	
					English	German
Rackwise Inc.	Yes	Rackwise DCiM X includes a web portal and Rackwise SmartClient as user interfaces for accessing the Rackwise DCiM X server via their desktop Visio, Excel and web-browser applications. This allows the user to work within a highly-intuitive and familiar environment where drag-and drop, equipment selection, and rack capacity and thresholds are presented in a familiar and easy to use interface. The Rackwise DCiM X user interface leverages the tools that 98% of all data center professionals (facilities and IT) are most familiar with. This has proven why Rackwise DCiM X is regarded as the easiest DCIM solution to learn and use.	Rackwise DCiM X provides users with the ability to create custom location-specific or device-level-specific properties within the system to incorporate and manage their own unique information. Rackwise does not impose a limit on the number of custom fields that may be added to the system. Users can create custom fields by simply adding an additional column to the Rackwise data import spreadsheet, which, on import, automatically creates the custom property, or they may add custom properties through the Rackwise SmartClient Solution Management interface which allows the creation, edit, removal of custom properties. All Rackwise reports may be customized based on 110+ reports available within the system. Existing reports may be used as templates and altered to meeting any customer's unique reporting requirements. Reports are built in Microsoft SQL Server Reporting Services (SSRS) and are provided in source form and may be edited using Microsoft Report Builder (a free and well-known report authoring utility). Furthermore, most Rackwise data elements are available via Rackwise Dataviews which provides a drag and drop report authoring capability for user report customizations. Reports may also be created from scratch by customers against the Rackwise Dataviews that assures upward compatibility in future Rackwise product releases. Rackwise is available to assist and perform these customization when customers desire additional assistance, however the system was designed to enable customers to perform these customizations by themselves to further reduce cost and outside dependancies.	Generally, No. This is because Rackwise DCiM X was designed to be updated dynamically in accordance with actual moves, adds, changes at the time they occur, Rackwise does not support offline editing of location or device models. The user can make unlimited copies of whole data centers (Locations) and enterprise hierachy (Solutions) for performing non-production what-if modeling scenarios.	Yes	No
Raritan Deutschland GmbH	Yes	Browser based html GUI – like a modern web site.	Via web service api.	Yes	Yes	Yes
Schneider Electric GmbH	Yes	User interface can be customized in the dashboard section, else you have the possibility to drill in to each component in there own enviroment, very simplified usage that enables the customer to get a fast learning curve.	specific customization can be done via Schneider Electric – software service department.	Yes	Yes	Yes
speedikon Facility Management AG	Yes	Communication with the user is possible in graphic and alpha-numeric dialog, which is intuitive and can be configured individually.	Dialogs, masks, functions and representations can be determined by the customer.	To a limited extent.	Yes	Yes

further	Search and Filter Functions	Visualization Possibilities	Logging	Further Information
	Rackwise DCiM X include three (3) complimenting search cabaibilties that are built into the system and include the following: ■ Search Keyword – seach by keyword through every property (including custom properties) and returns all occurances of the given key word. ■ Rack Search (intelligent placement) – the user inputs values for required capacity such as rack-units required, minimum current and voltage required, minimum network and power ports required (by connector type if desired), minimum cooling capacity required, etc. and the system returns the optimal location and rack that meets the given requirements. This can be performed across all locations, selected locations, or at a specific location. ■ Device Search – the user inputs a hostname, device type, any existing or custom property and the system returns the location and description for the given inputs. This search also allows for searching for existing blade chassis and available blade cards, with filtering by customer, department, or business server (ie: find all available blades that are dedicated to Customer-A from Location-Z).	Rackwise DCiM X provide a top down view of each location (facility, room, or data center). This view allows for color mapping of by available power, cooling, RU availability, and other views. Additionally, the user may toggle floorplan layers to control visibility of un-desired layers such as overhead pipeing, cable-trays, fire-suppression, etc). As the user "mouses over" racks and floor-mounted equipment on the floorplan, the system illustrates available capacity (calculated on the fly) for power, current, cooling, and available RU). The user is also shown a summary for location capacity power, cooling, network ports, power ports, etc that pertain to the entire physical location. The user can also browse location-specfic cost values (power cost, opex cost, etc) as well as review all changes made in the system for that location (who made the change, what change, date/time, before/after value, etc.). The user can then double click on any item on the floorplan in order to drill into that devices (ie: a rack for example) where they are presented with a detailed visual presentation of rack front and back with all equipment shown in a high-resolution and depicted accurately (ie: a Chatsowrth 53 RU rack) with all equipment in proper placement and accurately depicted. The user can then click on any device to drill in further (ie: a blade chassis fo example) where the user is presented with the high-resolution dipction for that device and attached subcomponents as well as navigate throug all properties associated with the device including all subcomponents (blade cards, power supplies, network interfaces, etc.), real-time monitors configured for the device, change log history (presented as in the floorplan view). Exactly as above, the user can drill further in to device subcomponents for the same level of detail and fidelity as described above.	Rackwise DCiM X captures and logs every change made in the system by location, by rack, and by device, and subcomponment. This provides a very granular level of tracking all changes throughout all locations in the enteprise. The change log captures who made the change, the date/time of the change, the specific device that was added, changed, or removed, as well as before/after values. The user can select to view only those changes that occurred between two dates or every change made. This capability is especially useful and leveraged heavily for physical DR replication, change control quality assurance, or regulatory audit requirements (Payment Card Industry Security Standards, Health Patient Record Privacy Regulations, and others.	Not specified.
■ French ■ Chinese ■ Japanese	All informantion is available by search and filters. Real-time search and reserving of space, power and data connectivity based on the best fit. Search by make and model or any other particular search criteria. Once space is detected, reservations can be made.	Full floormap, rack elevation, high quality images, full power and network paths.	Full audit log of all activity.	Not specified.
■ French ■ Italian ■ Spanish ■ Chinese Traditional ■ Chinese Simplified ■ Korean ■ Japanese ■ Brasilian Portuguese ■ Russian	Any property of any item can be searched or filtered.	The StruxureWare Portal provides transparency to data center key performance indicators and business metrics, displaying customizable information for a high-level overview of data center operations. The Portal makes it easy to share information with relevant colleagues or external agencies, providing a shared platform and bridging the gap between Facitlities, IT and the C-level stakeholders.	Full looging for all devices and actions, work orders, and many others including reports.	Not specified.
■ French	All attributes can be searched for and filtered.	*speedikon*® DAMS is graphically oriented, so that all assets and analyses can be visualized.	All changes are saved in the history.	Not specified.

Company	Is the system able to support multiple clients?	User Interface	How can customer-specific customization be undertaken?	Can the data be used and maintained offline?	Supported Languages	
					English	German
TKM – Telekommunikation und Elektronik GmbH	No	Web based.	Fully visual customising - starting from a neutral version with neutral handbook up to fully brand labelled.	No	Yes	Yes
tripunkt GmbH	Planned Q3/2014.	Pathfinder distinguishes itself through a simple, intuitive and modern user surface. Significant features are the consistent use of the following technologies: ■ Drag&Drop, shortcuts ■ User guidance through assistants ■ Allocation of context menu to right mouse button ■ Visualization of information Objective: Reduction of the training necessary through assistants, clear user guidance and reduction to the fundamentals. The user interface is streamlined in order to hide unneccessary complexity.	Analysis and estimation of costs. Implementation of stand-alone module.	Pathfinder Mobile also makes all information available offline. Changes can be compared with the server. Export of the complete data base to a file-based data base (SQLite) is also possible for the Windows client.	Yes	Yes

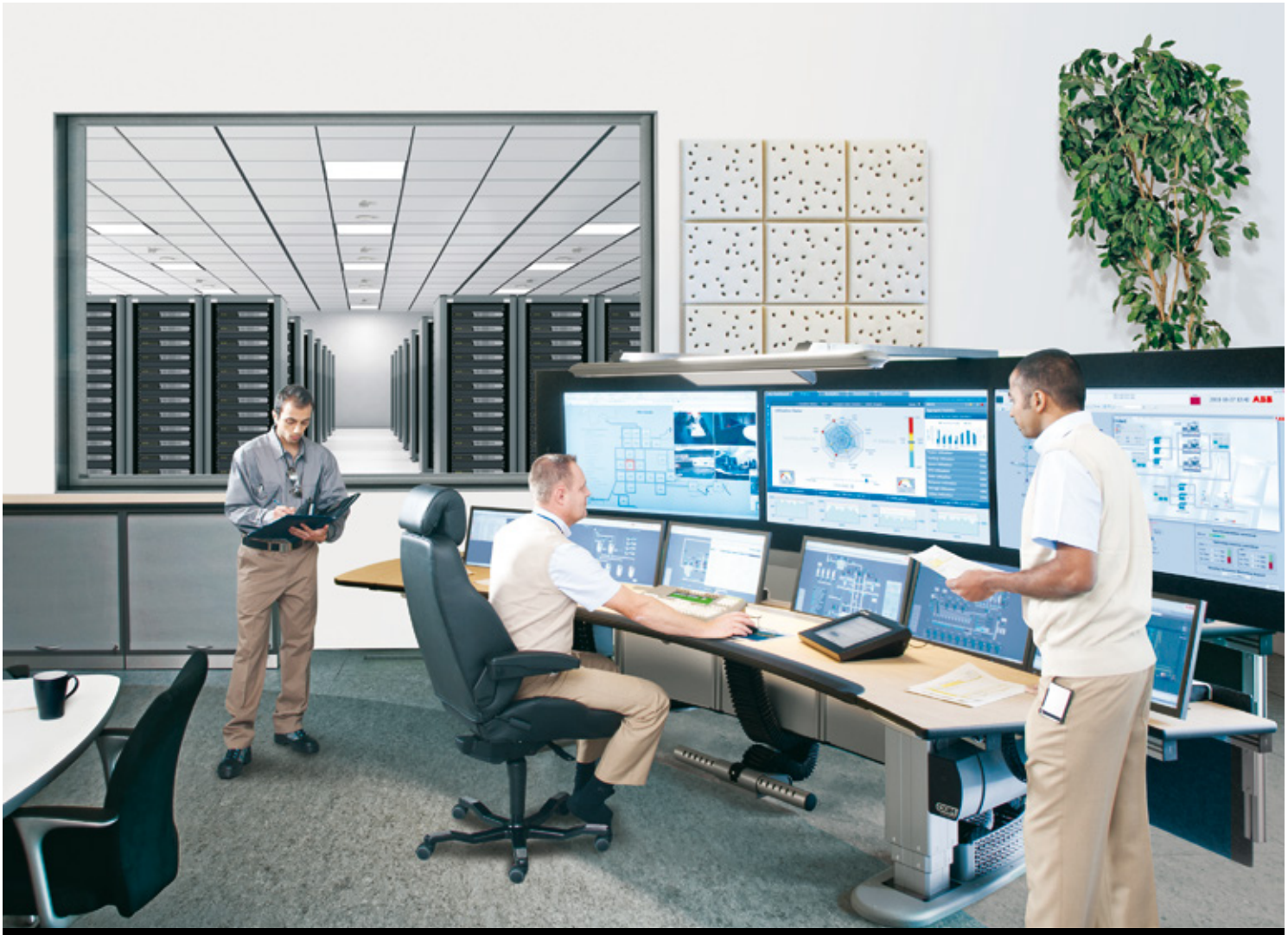
	further	Search and Filter Functions	Visualization Possibilities	Logging	Further Information
	■ French ■ Spanish	Pre-defined filter functions filters fully individual configurable.	■ Grafical and textual display options, ■ tree structure of entire network, ■ rack view with details of port/ connection attributes, and ■ table and spread sheet display options.	Protocol procedure with 11 levels.	Not specified.
		Pathfinder offers a global text search for all objects and attributes. In addition, specific data, like free capacity/lines, can be queried using a context-dependent search function. Every list represented in the program is filterable, groupable and exportable (Excel).	All assets, locations and cable connections are visual-ized. Pathfinder also offers overviews and detail views for all network levels (floors, rooms, etc.) and additionally makes switching cabinet views available with four administrable levels per cabinet. The storing of raster and vector graphics is possible. An integrated graphics engine makes the display of all objects and connections possible. Layout of objects (color, transparency, size) can be individually designed. Moreover, the to-scale representation of the data center and network components is possible.	The system-internal history includes the following functions: ■ Logging of changes for each user ■ Display of changes per component. ■ Display of all changes system-wide according to the indicated time-window.	Not specified.

Pricing Information

The calculation of licensing fees does not occur according to a unified model. The following dimensions were designated by the providers:

- Number of floor mounted assets
- Number of floor mounted assets and sites
- Number of megawatts
- Number of square meters of the DC
- Number of monitored points
- Number of racks
- Number of racks and monitored equipment
- License depending on size of data center
- Number of cores
- Single work-station and network license
- Depending on server system
- Number of concurrent users and interfaces
- Depending on the module
- Project-specific
- Customer-specific

One provider also offers a hosted solution.
The cost of licenses was not requested.
Maintenance costs are generally a percentage of the license fees. The services included vary.
In brief, the external costs are made up of licensing, customization and maintenance costs.



Can one supplier provide your most critical systems?

Certainly.

Think differently about your data center. Rather then integrating products and systems from many different sources, consider a partnership with ABB for comprehensive, intelligent data center packages to power, monitor and automate key elements of your infrastructure. From AC and DC power distribution systems to grid connections, DCIM and modular UPS solutions, combined with local project management and service, ABB is transferring decades of success in mission-critical facilities to the decades ahead for high-performance, reliable data centers. **www.abb.com/datacenter**

ABB Automation GmbH
Tel. +49 (0) 1805 26 67 76
E-mail: marketing.control-products@de.abb.com

Power and productivity
for a better world™

Advanced CMDB for Data Center Infrastructure Management

AixBOMS

AixBOMS has been developed with a strong focus on planning and efficient operations of data centers in mind. With its support for state-of-the-art technology, standardization, compliance requirements, and an open interface design, its underlying CMDB has become an indespensible information hub for a variety of IT management disciplines.

www.aixpertsoft.de

Sophistcated diagnostic and analytical tools for DCIM facilitate easy identification of bottlenecks in areas such as (but not limited to) power and climate management. Some of the latest enhancements to the software match top IT trends for service providers and data center managers, such as customer-specific billing, service orientation, virtualization, cloud computing, connectivity, and IP address management (IPAM) for IPv4 andIPv6.

AixBOMS Data Center Infrastructure Management (DCIM) is fully CMDB-based and -driven. It includes a set of powerful graphical editors, such as RackView and AreaPlan, supplies access to a unique planning mode, and visualizes complex information in a meaningful manner. With technologies such as drag & drop and multi-windowing for installs, moves, adds, and changes of complex components, racks or suites of cabinets it by far exceeds the capabilities of browser-based solutions. Workflow-based extensive change management, simple ITSM integration and support for proprietary measurement and sensor technologies can only be achieved through its sophisticated CMDB core.

AixBOMS is provided to you by AixpertSoft the experts for IT infrastructure, data center, and service management from Aachen (Germany).
In 2013, the AixBOMS SMB suite won the award for innovation in the "IT Services" category from the "Initiative Mittelstand".
For its latest enhancements in DCIM, AixBOMS was also awarded the eco Internet Award 2013 in the category Housing / Hosting / Data Center.

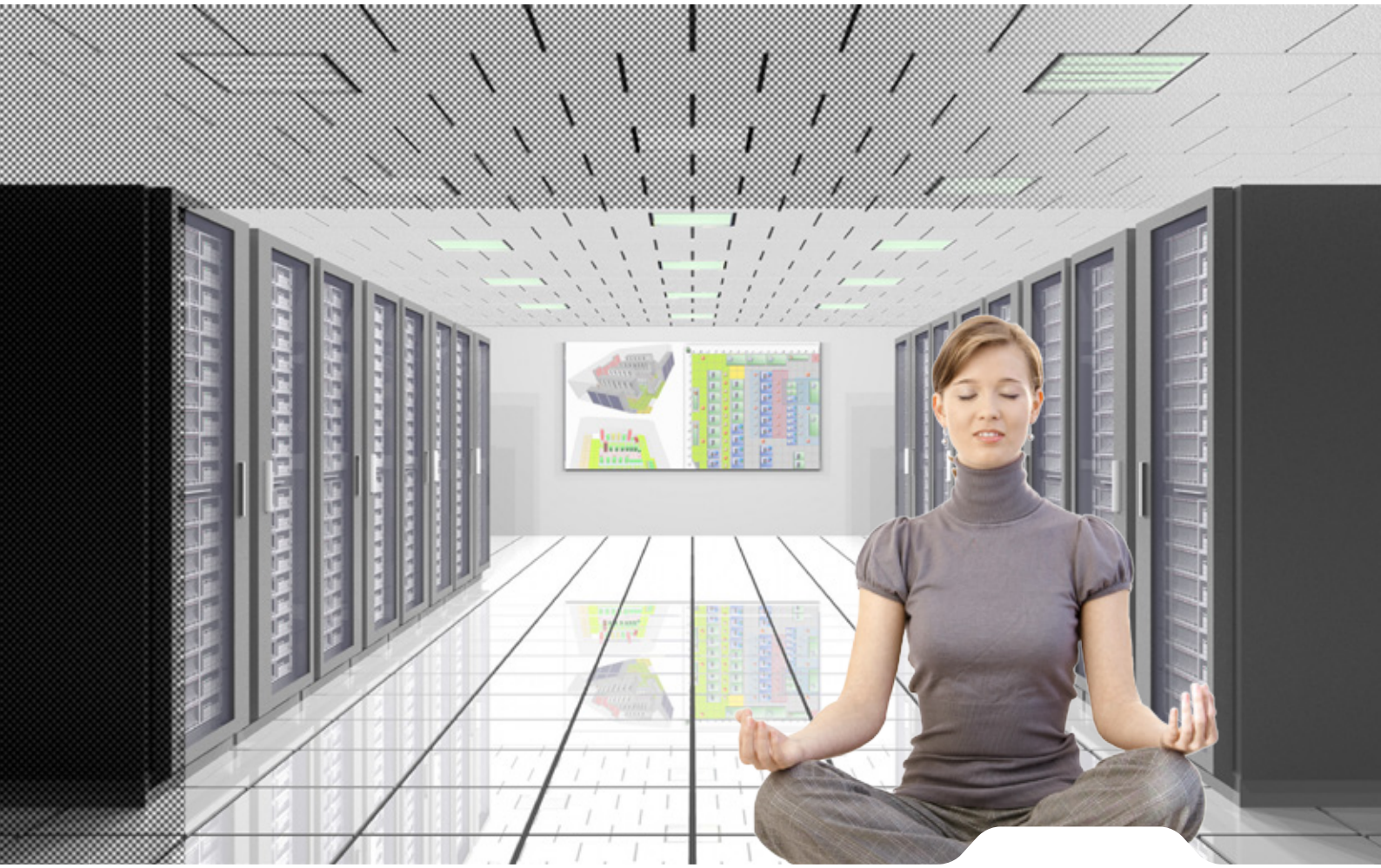
AixpertSoft


RagingWire guarantees
100% uptime
with CA at the center.
CA.com/AtTheCenter
ca
technologies

FNT

// when transparency matters.

// Experience the inner calm that comes with successful data center management



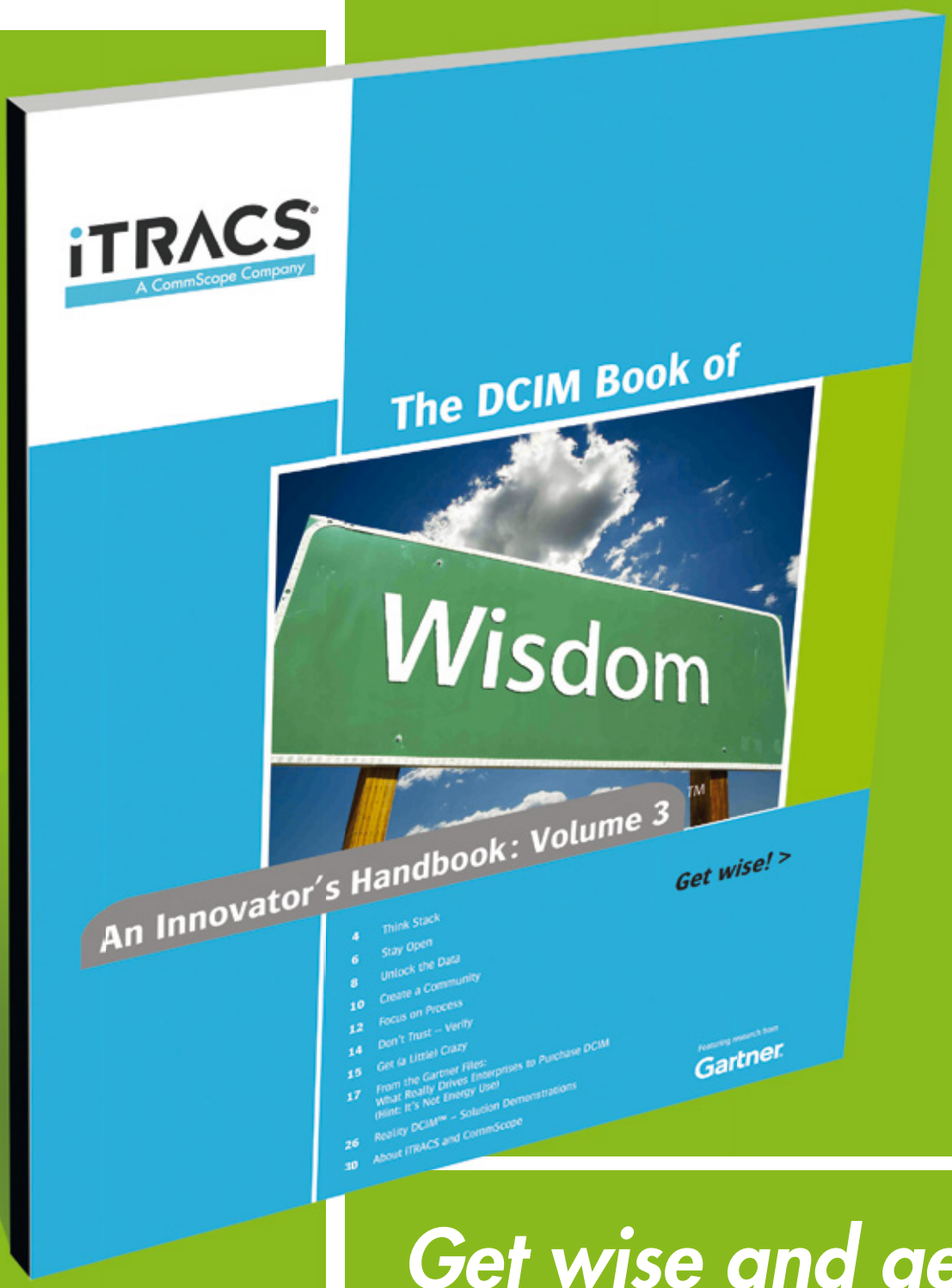
FNT's DCIM solution allows you to organize and enhance your data center's resource efficiency.

Facilities, networks, IT equipment, software, and business services are all included in a single integrated data model, providing the foundation for high-value IT services and an energy-efficient data center.

Learn more at:
www.fntsoftware.com/DCIM

iTRACS®
A CommScope Company

The DCIM Book of Wisdom™



Get wise and get your free copy!

itracs.com/getwiser

Transform Your Data Centre into a Strategic Asset

SmartZone™ Solutions for Intelligent Data Centres

Panduit Intelligent Data Centre Solutions

Panduit SmartZone™ Solutions enable comprehensive energy and physical infrastructure efficiency in data centres, facility domains, and enterprise estates through intelligent software, hardware, and services. By providing granular visibility of power, space, environmental, asset, and connectivity information, SmartZone™ Solutions deliver accurate and actionable insight to optimise operations and truly transform the data centre into a strategic asset.

- **Maximise Capacity:** Discover true capacity utilisation and quickly identify available or stranded capacity that can be reclaimed to maximise existing resources and extend the life of the data centre
- **Improve Energy and Operational Efficiency:** Gather actual energy consumption and environmental dynamics to uncover opportunities for greater power usage effectiveness and automate processes and procedures to reduce operating costs
- **Ensure Uptime:** Automate real-time identification and notification of potential service-impacting issues, unauthorised access, or unplanned changes for greater resilience and security

www.panduit.com/DCIMSimplicity
smartzone@panduit.com

Scan QR code for more information.

Unified Physical Infrastructure

building a smarter, unified business foundation
Connect. Manage. Automate.

PANDUIT™

Comprehensive Data Center Infrastructure Management (DCIM) Software Suite

Value Proposition

The largest expense in the data center is energy and the most precious commodity is space. The challenge for optimization comes from complexity and knowing what needs to be optimized, when, and justifying it financially.

Rackwise DCiM X™ empowers facility managers, IT, and business leaders by providing one pane of glass to gain insight and make informed decisions about:

- What needs to be optimized
- How to justify the optimization
- Measuring the optimization's benefits

No more point-solutions that can't talk to each other, disparate spreadsheets, or unsupportable home-grown systems; **Rackwise DCiM X™** provides an easy to use solution that simplifies data center management, monitoring and reporting.

"Unisys Corporation leverages Rackwise across 13 global data centers for managing our customers as well as our hybrid cloud environment with great results", said Michael Westerheim, Unisys Director of Global Data Center Services, "so much so that we designed a highly-innovative managed service offering centered on it".

Plan views of data center and elevation views of racks and equipment

More than 32,000 diagrams from over 500 equipment manufacturers or model your own with generic ones

Visualize and edit entire power-chain with single-line power modeling

Over 100 preconfigured reports and ability to easily create custom reports

Features and Benefits

Visualization

- Accurately show data centers, enterprise IT, IDF closets
- Drill into racks, devices, and component-level details (front and back)
- Color overlays for power, space, temperature, and more
- Layer support for aisle containment, reserved space, cable pathways, and more

Asset Management

- Physical equipment, software and virtualization inventory
- Manage warranty, lease, maintenance, and device lifecycle
- Fully integrates with leading workflow and CMDB solutions
- Map relationships to business, customers, and departments

Capacity Planning

- Calculates power, cooling, and network headroom
- Intelligent search and optimal placement of new equipment
- Analyze current & future impact of changes to infrastructure
- Easily build multiple models to best understand impact

Real-time Monitoring.

- Power, Current, Temperature, Humidity, and more
- Integrates with your Building Management System (BMS)
- Device and Circuit-level monitoring
- Detect capacity hot-spots within your infrastructure
- Supports any manufacturer of intelligent equipment

Advanced Reporting and Analytics

- Charge-back based on resource consumption
- Detailed reporting on energy consumption, capital and operational expenses associated with business service, applications, customers, departments, and others
- Real world analytics for power utilization and capacity
- Calculates resource and cost savings before any changes
- Build tech-refresh business case with break-even analysis

Data Center Optimization

Optimize your infrastructure through specifically designed "what-if" analysis features created to continuously review resource consumption, technology refresh opportunities, decommission and commissioning of new equipment:

- Determine top power consumers by type and location
- Identify stranded capacity and virtualization candidates by:
  - Low CPU utilization
  - High power consumption
  - High heat generation
  - Space utilization
  - Business service association
- Review and instantly compare business service costs across all data center locations.
- Continuously calculates PUE for Green reporting and supports your ENERGY STAR® scoring initiatives.

For more information, please visit www.rackwise.com, or contact us at info@rackwise.com.
Register now to attend one of our monthly webinars and live-demonstration at www.rackwise.com/events.

Case Study

BRITISH AIRWAYS

Raritan's Data Center Infrastructure Management (DCIM) solution manages British Airways' 6 Data Centers

British Airways is a full service global airline, with an extensive route network flying from its Heathrow and Gatwick hubs as well as to and from many regional and international airports. Since merging with Iberia to form the IAG group, British Airways has become the world's third largest airline.

British Airways was looking for advice on how to upgrade and extend the use of the airline's data center infrastructure management tools it uses to allocate space, control work flow and aid capacity planning across its two sites near BA's Waterside HQ at Heathrow.

The Challenge

British Airways was an early adopter of data center infrastructure management (DCIM) software. They wanted to extend its use with an easy to use, flexible solution that could make server allocation faster and provide instant reporting and real-time dashboards of power and cooling capacity.

The Solution

After consulting with British Airways on their needs they were recommended implementing a new DCIM solution; Raritan's dcTrack, instead of upgrading the existing systems.

British Airways has a very large IT infrastructure with over 500 data cabinets spread across 6 halls in two different sites near its Heathrow Waterside HQ.

All the servers and IT assets, as well as the network and power cabling connections in its data halls were mapped into dcTrack. This provided an easy to use solution that displays real-time information, as well as asset and capacity reporting.

The Result

British Airways is now using dcTrack across its data center infrastructure to manage server, power and network connectivity. Any planned changes are first put into dcTrack, instantly identifying which racks have cooling, power and space capacity using its extensive library and interactive floor plan. All approved moves and changes are made using the work order system within dcTrack to ensure physical assets are connected in the right rack.

"The new DCIM software allows us to quickly allocate space for new servers, manage power and network connectivity, issue work orders and provide capacity planning across all British Airways data centers."

- Keith Bott
Service Manager
British Airways

For more success stories

visit www.RaritanDCIM.com

Raritan.
Know more. Manage smarter.™

Are you planning to introduce a DCIM system?

If yes, this is the best time to get in touch with us. Together we will find out what is needed for you to make the best possible use of the new system.

Growth needs care.

We have spezialised on IT documentation data migration processes. Our tools help to improve your data quality and guarantee a swift and smooth data migration process.

yandree GmbH

It doesn't cost to ask. www.yandree.com or +43 316 820 106 or welcome@yandree.com

About the Author

Monika Graß
Grass Consulting

www.grass-cm.de

Having studied Public Administration and worked for many years as an IT consultant, Monika Graß has been active as an independent consultant in the data center environment since 2005 with her company GRASS CONSULTING.

Since 2012, she has been developing the eco Association event format ecoTrialog, a platform which enables the exchange of knowledge and experience at eye-level for manufacturers, operators, users and planners from the IT, carrier and data center environment.

She has been decisive in the further development of the eco Datacenter Star Audit and as an auditor, she coordinates the execution of the certification.

Monika Graß is a jury member for several international industry awards, among others the International Datacentre and Cloud Awards from the British company BroadGroup, and the eco Internet Awards from eco – Association of the German Internet Industry e.V.

The communication between the participants in a data center (facility, operations, network, ICT, users, customers, suppliers, etc.) will be, in her eyes, a substantial success factor in the coming years. With DCIM, the foundation of this can be created – as long as you use it optimally for your company. Even the management can benefit!

Monika Graß is happy to support you in the following ways:

- Definition the requirements for a DCIM solution
- Support during the tendering process
- Accompanying the DCIM implementation

About the eco Association

eco, with more than 750 member organizations, is the largest Internet industry association in Europe.

Since 1995, eco has been instrumental in the development of the Internet in Germany, fostering new technologies, infrastructures and markets, and forming framework conditions. In the Competence Network, all important specialists and decision makers of the Internet industry are represented, and current and future Internet themes are furthered.

Special eco services help to make the market more transparent for providers and users. The eco seal of approval ensures quality standards; eco's consultations for members and services for users provide support in questions of legality, security and youth protection.

As an association, one of eco's most important tasks is to represent the interests of its members in politics, and in national and international committees. As well as headquarters in Cologne, eco has its own office in the German capital Berlin, and are represented at all relevant political decision-making processes in Brussels.

eco is a founding member of EuroISPA, the umbrella organization for European Internet associations, eco also represents the German industry with a seat on the Council of the Generic Names Supporting Organization (GNSO) at ICANN, and is a driving force behind the Internet Governance Forum – in short: **WE ARE SHAPING THE INTERNET.**

Room for Notes

Association of the German Internet Industry

eco – Association of the German Internet Industry
Lichtstraße 43h, 50825 Köln (Cologne)
Phone +49 (0)221/70 00 48 – 0 , Fax +49 (0)221/70 00 48 – 111
info@eco.de, international.eco.de

WE ARE SHAPING THE INTERNET.

eco

Because you asked for the big picture.

Introducing DCIM with visibility from building to server: StruxureWare for Data Centers software suite.

Maximize
efficiency
Improve energy efficiency by seeing data center energy waste and, in turn, eliminating it.

Optimize
availability
Achieve higher availability with full visibility across your data center physical infrastructure.

The total view you need
Seeing across your data center's physical infrastructure from the building level down to the server level (and vice versa) is imperative to balance availability and efficiency. Today, you need to adapt quickly to business requirements without risking availability or system efficiency. Not only does an end-to-end view protect system availability, it can enable concrete energy and operational efficiency gains as well.

Achieving the right balance
Schneider Electric™ StruxureWare™ for Data Centers software provides this total visibility by bridging facilities and IT. In fact, our advanced data center infrastructure management (DCIM) software graphically shows your IT equipment within the data center physical infrastructure layer — from rack to row to room to building — so you can monitor and protect system uptime, as well as simulate and analyze the effect of moves, adds, and changes in relation to resource capacity and energy use. The result? Facilities and IT easily can collaborate to ensure that the data center can adjust at any time to business requirements while always balancing availability and energy efficiency.

StruxureWare™

End-to-end visibility of your data center:
- Visualize change/capacity scenarios
- View your current and historic PUE/DCiE
- Maintain highest availability at all times
- See and manage your energy use
- Manage space and cages in multi-tenant facilities
- Enhance life cycle services from planning to maintenance

APC™ by Schneider Electric products, solutions, and services are an integral part of the Schneider Electric IT portfolio.

Business-wise, Future-driven.™

Visit our table and enter to win a Samsung Galaxy Gear! Download our FREE DCIM white paper!

Visit www.SEreply.com and enter key code 47361P

Schneider Electric™