

StruxureWare™ Data Center Operation

A new level of business intelligence for your data center infrastructure management

Data Center Infrastructure Management (DCIM) software for proactive data center life cycle management, optimizing existing capacities through intelligent resource and energy analysis, coupled with impact analysis, based on asset tracking and documentation.

www.schneider-electric.com/dcim

Life Is On

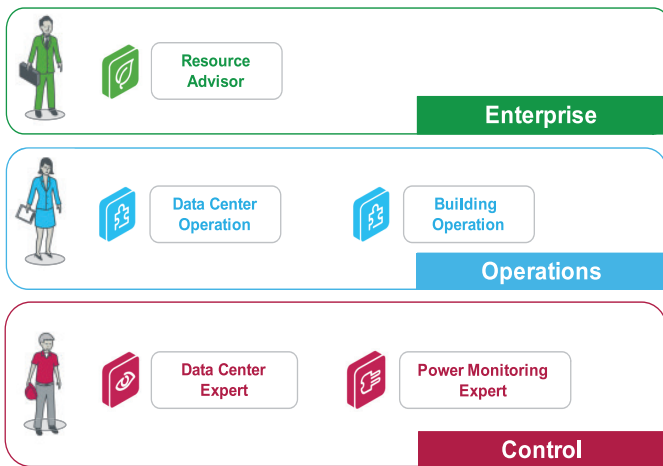
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StruxureWare Data Center Operation



StruxureWare for Data Centers

- an integrated suite of management software applications for balancing the demands of availability and efficiency throughout the data center lifecycle.



A new level of business intelligence for your data center physical infrastructure management

StruxureWare for Data Centers is designed to plan, monitor, and operate the data center from server to rack to row to room to building.

The suite addresses specific challenges across data centers through:

- > Integration with third-party offers and legacy systems.
- > An open, scalable platform.
- > A consistent user experience.

A DCIM suite

Data Center Infrastructure Management (DCIM) systems collect and manage data about a data center's assets, resource use and operational status throughout the data center lifecycle.

This information is then distributed, integrated, analyzed and applied in ways that help managers meet business and service-oriented goals and optimize the data center's performance

DCIM solution benefits

- > A holistic DCIM suite managing all aspects of the data center
- > Leverages and optimizes the existing infrastructure
- > Provides robust, scalable and integrated software solutions
- > Created by people who builds data centers daily



DCIM releases the potential for energy savings

StruxureWare Data Center Operation

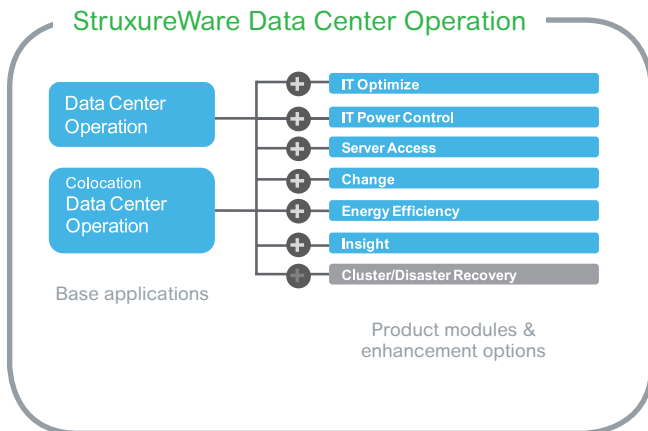


StruxureWare Data Center Operation

A new level of business intelligence for your data center

With its capability of communicating with building, enterprise and network management systems, Data Center Operation optimizes energy and cost efficiencies and aids in short - and long-term planning and provisioning of data center equipment and resources

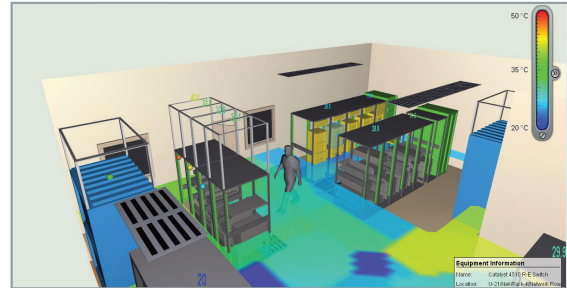
Data Center Operation forms the base layer of software, available either as an enterprise or a colocation base module, which other modules and enhancement options can be added onto.



Data Center Operation is a scalable Data Center Infrastructure Management (DCIM) framework that can run on any physical or virtual server.

A DCIM application

Data Center Operation enables vendor-agnostic inventory management within your data center physical layout, as well as recommendations on how to resolve issues.



AT A GLANCE

> A inventory management device which shows data within the physical layout for instant access to device details and asset attributes, and overview of data center operations.

> A location-based drill-down view provides a structured overview of data center locations, from a global to local view down to single assets.

> A network management tool offering support for complete routes and patch panel to patch panel mapping.

> The Power Usage Effectiveness (PUE) calculator supplies information on daily utilization of energy.

> Track all cage and facility equipment changes over the data center lifecycle, ensuring transparency and easy identification of maintenance requirements.

> Allows the user visibility into the data center assets, power usage and power capacity using an HTML5 compatible browser.

> Delivers key data center capacity parameters straight to a wireless device such as Apple iPhone, iPad, Blackberry, or Android-based smart phone devices.

StruxureWare Data Center Operation



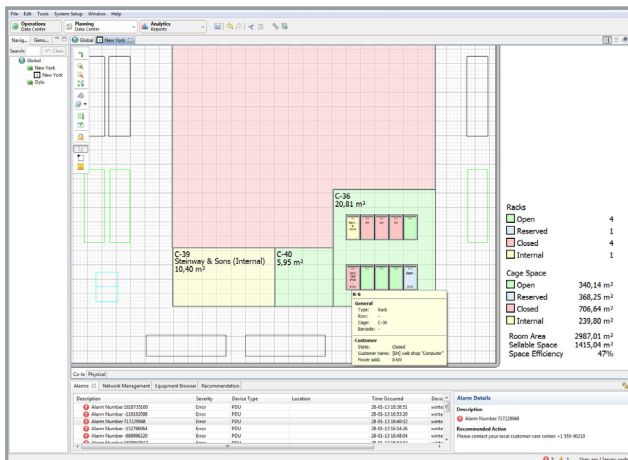
StruxureWare Data Center Operation for Colocation

Asset and cage space management for an optimized multi-tenant data center.

Data Center Operation for Colocation enables vendor-agnostic inventory management within your data center physical layout, as well as recommendations on how to resolve issues.

Visualization

Visualize new cages during the pre-sales phase for planning potential new customer cages and supporting the sales process



Data Center Operation for Colocation extends the usage of DCIM tools to the multi-tenant sales process, where it provides instant visualization of space available for selling on to tenants, broken down by used, reserved and available capacity, and identifies how much is required going forward.

This expands the user group of DCIM into the front office of the business - making it a driver for business development.

Optimizing the multi-tenant data center

Data Center Operation for Colocation transforms the way that multi-tenant providers are doing business by optimizing data center capacities and business processes, which in turn frees up valuable time to focus on developing the business.

AT A GLANCE

> The application provides multi-tenant providers with a real-time status of their current data center capacities, in terms of data center power, cooling & space, and the ability to drill down further and identify any constraints for expansion.

> With cage space management the data center operator can import CAD drawings, apply grid-based naming for floor mount equipment, utilize cage drawing tools and cage power modeling and visualize the solution in 3D.

> Facility maintenance is made easy through a complete audit trail on all facility equipment and cages, the ability to create and track maintenance schedules by equipment and use impact analysis to ensure redundancy is maintained during maintenance.

> The open system integrates tenant billing information into the DCIM system for mapping tenant assets, providing detailed power draw, total energy footprint and access to an instant impact analysis at the tenant level.

> Allows the provider to provide tenants with visibility into their own assets, power usage and power capacity usage without having direct access to the provider's local network.

> Allows the user visibility into the data center assets, power usage and power capacity using any modern web browser.

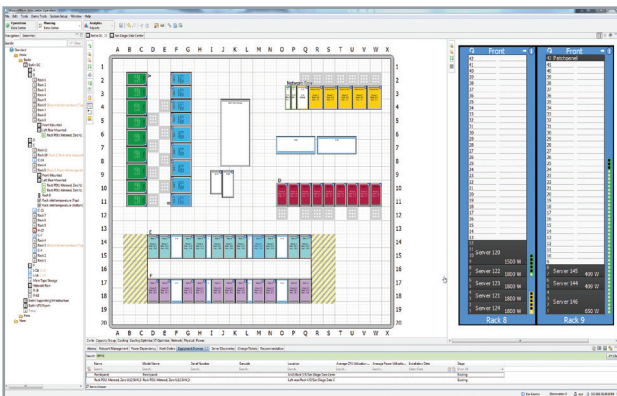
StruxureWare Data Center Operation



Data Center Operation: Capacity

Extending the lifecycle of the data center through optimization of power, cooling, network and space capacities.

Planning and optimizing utilization of actual physical infrastructure capacities via shared data center model, enabling efficient equipment provisioning and right-sizing of your data center

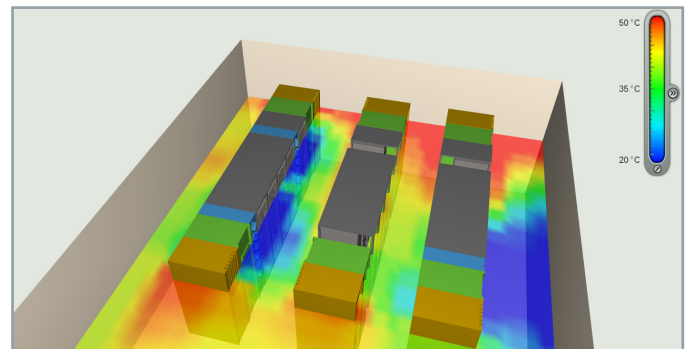


Integration with VMware and Microsoft System Center Virtual Machine Manager

> The integrations provide insight into how virtual machines relate to physical servers and their location, automatically migrating virtual machines to secure host environments from faulty infrastructure enabling customers to maintain Service Level Agreements and view and manage network health.

A DCIM product module

Capacity predicts the optimal location for physical infrastructure and rack-based IT equipment based on the availability and capacity requirements; and user defined requirements such as redundancy, network and business use grouping.



AT A GLANCE

> It reduces stranded capacity through optimized use of the physical infrastructure and avoids unplanned downtime.

> With its sophisticated simulation based on live data, Capacity pro-actively analyzes the impact of changes before they occur, enabling informed decision making and planning, ensuring that your physical infrastructure provides the required capacity for current and future needs.

> Capacity calculates the airflow and temperature inside the data center based on live sensor and temperature data and displays it in a 3D view, making it easier to locate hot spots.

> Provides rack and breaker level capacity planning and provides the potential to unlock stranded capacity as estimated load values are automatically derived from actual power measurements.

StruxureWare Data Center Operation



Data Center Operation: Cooling Optimize

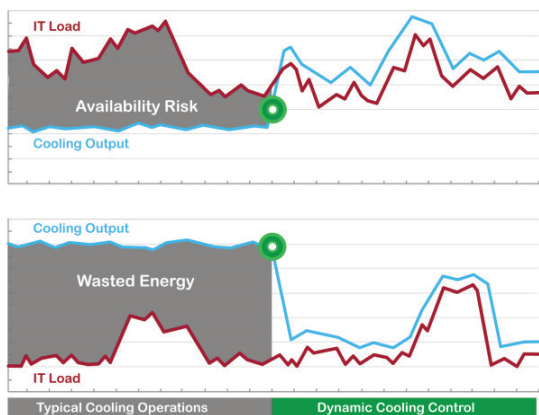
Dynamic cooling management and optimization

Cooling Optimize continuously optimizes airflow in the data center facility, delivering improved reliability and availability.

Cooling Optimize is a closed-loop system that reacts to real-time data, automatically identifies and eliminates hot spots and helps diagnose potential facility risks.

The application balances the need for cooling with the lowest possible energy expenditure, delivering immediate cost savings and the right amount of cooling within the data center.

The application provides facility managers with control over desired temperatures and visibility into thermal conditions. It employs intelligent software which constantly adjusts cooling as environmental conditions change.

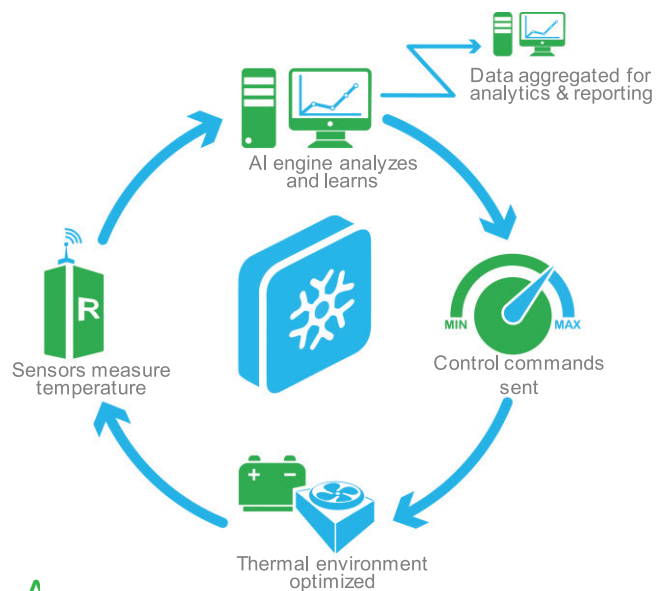


This real-time response to temperature-affecting events, such as equipment moves, upgrades or IT load swings, stabilizes air flow and solves the complex puzzle of cooling resource allocation.

A DCIM product module

Cooling Optimize utilizes a dense array of temperature sensors to determine exactly where the heat load is within the data center. Data is wireless transmitted to network gateways, aggregated, and sent to a purpose-built appliance where it is analyzed by control software. Control commands are then delivered to the cooling equipment.

As IT load changes, the built-in machine learning automatically adjusts cooling output to match the dynamic data center environment.



A

> Cooling Optimize is a closed-loop system that reacts to real-time data, which reduces the chances of downtime.

> Automatically removes up to 95% of hot spots, and helps diagnose potential facility risks.

> Constantly adapts cooling to varying IT loads through the use of its artificial intelligence engine.

StruxureWare Data Center Operation



Data Center Operation: IT Power Control

An add-on module for Data Center Operation: IT Optimize

A DCIM product module

IT Power Control, powered by Intel® DCM, delivers rack-level power capping for an optimized infrastructure and delayed physical equipment investment.

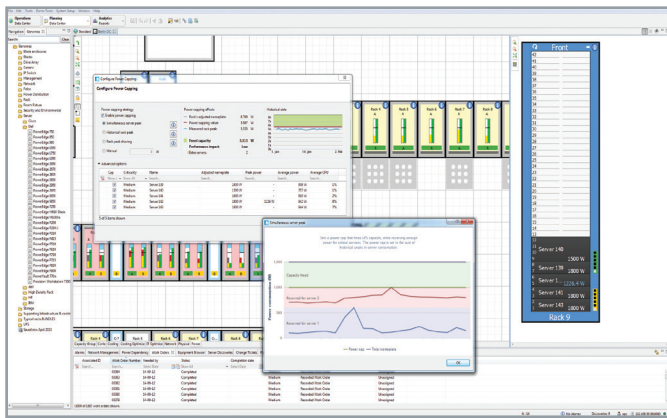
AT A GLANCE

> Increased rack densities are achieved through power capping of servers and racks, reducing over-provisioning and enabling operation of the data center closer to the capacity limit without compromising availability and safety margins.

> Redistribution of power density according to criticality levels are easily implemented through the use of rack based policy configurations, ensuring power savings and delayed physical equipment investments.

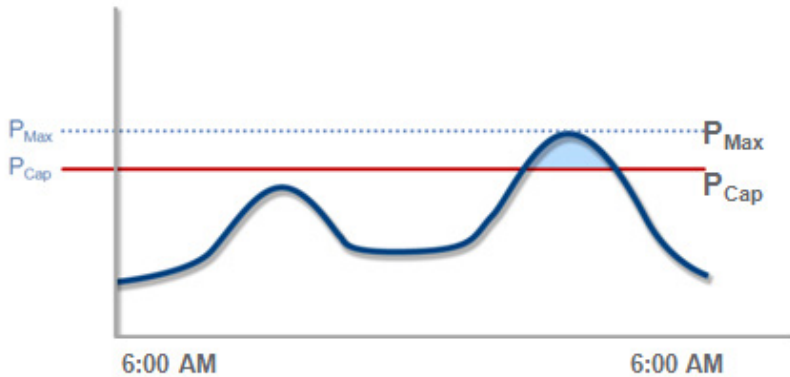
> Business continuity is maintained in the event of a UPS failing, as power capping ensures that business critical racks and servers maintain their power supply and no breakers are inadvertently tripped.

> The software requires Data Center Operation: IT Optimize.



Real-time temperature and power data for accurate policy configuration.

Moderate energy savings achievable through always-on power cap



Powered by:

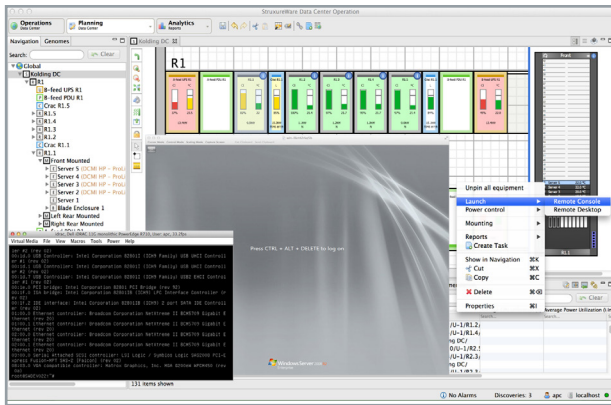
StruxureWare Data Center Operation



Data Center Operation: Server Access

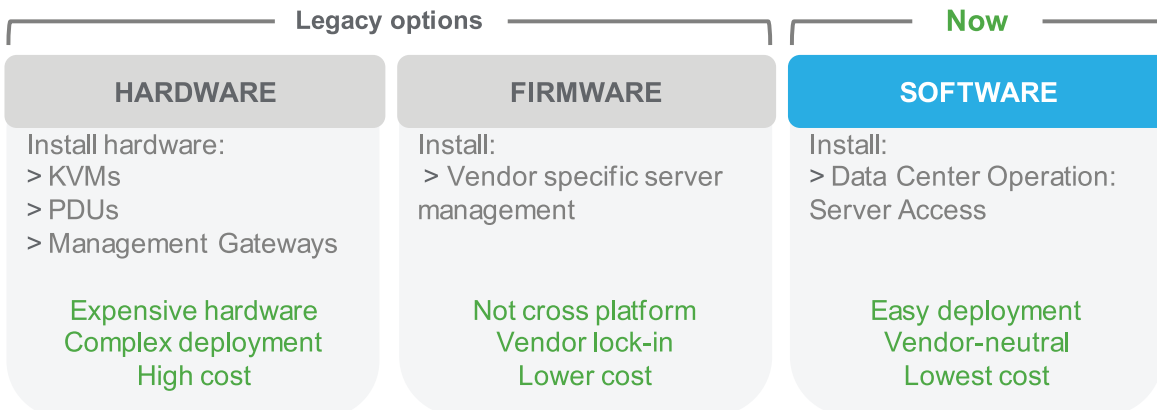
Software only server access within your Data Center Infrastructure Management (DCIM) solution.

Eliminate the need for traditional hardware-based KVM (keyboard, video, monitor) switch technology through the use of a software only solution, reducing deployment cost by more than 50%.



Rapid to deploy, easy to use.

Remote server access alternatives



A DCIM product module

Server Access provides full lifecycle access to the server Operating System (OS) and the Base Management Card (BMC) for controlling multiple IT devices from a single console, allowing users to control input and output server operations via remote management.

> Power cycling enables users to remotely access servers when they are off line, and power up/down or restart servers, even when the server OS is down.

>Server Access enables both in-band and out-of-band access to servers.

> Access the BIOS (basic input/output system) or the BMC directly from the DCIM software to solve hardware problems preventing a server from booting normally.

> The software provides automatic discovery of servers for quick and accurate IT asset management.

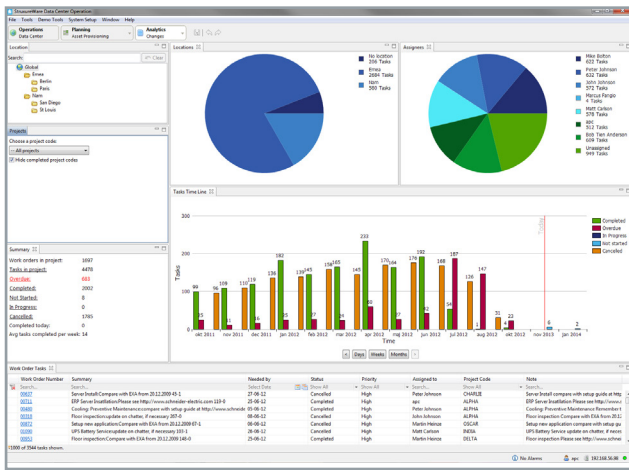
> Server Access is a software only application that requires no additional hardware or cabling. It eliminates the need to purchase KVM switches and other expensive hardware that consume data center space and power.

StruxureWare Data Center Operation



Data Center Operation: Change

Workflow management allows for easy tracking and executing of moves, adds, and changes of equipment in the data center



The change dashboard shows past, future and pending changes to assist with resource and workload balancing, and avoid scheduling conflicts.

Integration with BMC Remedy

- > Ensures relevant information is shared and flowing between Change and the market leading process management system.
- > Associate Change with BMC Remedy change tickets with Change work orders, as well as view and filter BMC Remedy tickets for an overview of current work load.

A DCIM product module

Change enables operators to gain control over the data center environment by implementing organized moves, adds, and change work processes, significantly reducing the risk for inadvertent downtime.

AT A GLANCE

- > 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 lifecycle.
- > Users can now design, allowing the user to set up both parallel and sequential workflows and the dependencies between the individual tasks.
- > The optional Data Center Operation: Mobile provides you with your operational changes while on the data center floor, enabling bar code scanning and ensuring data integrity, as well as improved operational efficiency.

> Gain total transparency of physical equipment changes by user in the data center through Change.

> Track asset moves, adds and changes by date/ time, owner and work orders for view, print and export.

> Provides alarms, alarm descriptions and recommended actions via hand held device for data center operations on the go.

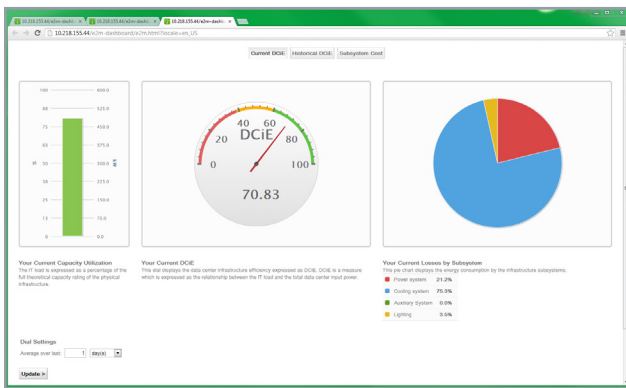
StruxureWare Data Center Operation



Data Center Operation: Energy Efficiency

Full insight into current and historical energy efficiency for facilities, identifying efficiency losses and enabling improved PUE/DCiE values at subsystem level.

Provides insight into energy losses and cost of energy at subsystem level, providing details of which subsystem draws the most costs.



Carbon footprint - Shows the CO2 footprint for each energy sub-system, for instant measurement of impact on the environment.

A DCIM product module

Energy Efficiency provides current and historical Power Usage Effectiveness (PUE) and Data Center Infrastructure Efficiency (DCiE) values, enabling a fact-based understanding of how much power is devoted to driving the installed IT equipment compared with the total facility consumption.

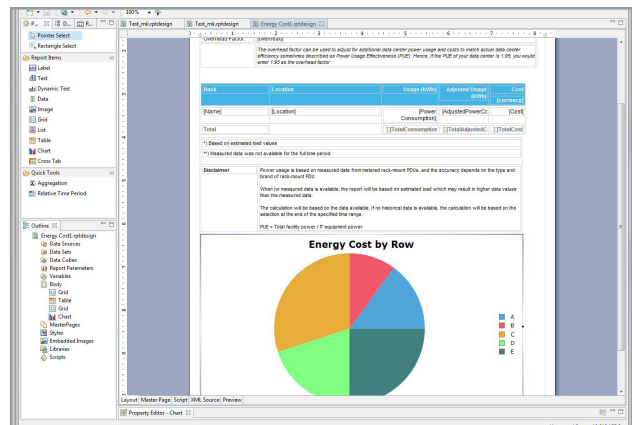
AT A GLANCE

> It provides a detailed insight into how effectively energy is utilized down to subsystem level.

> Provides an understanding of how to improve energy efficiency. Subsystem data can either be measured or estimated, also allowing customers with few power meters to benefit from the application.

> The web-based dashboard view includes efficiency data on current and historical PUE/DCiE, as well as detailed subsystem cost analysis.

> Available via Data Center Operation, which enables integrations with Data Center Expert for monitoring purposes and 3rd party enterprise systems.



StruxureWare Data Center Operation



Data Center Operation: Energy Cost

Cost analysis of energy use on a kW/h basis, detailed to the rack level, for calculating cost of energy consumption for specified equipment and aid in charge back and efficient budgeting

Customized reports can easily be shared with all stakeholders through support of various file formats (html, csv, excel and pdf).

Rack	Location	Average Power	Adjusted Power	Cost
Rack 11	Network-Resilient-DC-Block-1-1	1,451.52	5,192.25	497.25
Rack 12	Network-Resilient-DC-Block-1-2	1,451.52	5,192.25	497.25
Rack 13	Network-Resilient-DC-Block-1-3	1,451.52	5,192.25	497.25
Rack 14	Network-Resilient-DC-Block-1-4	1,451.52	5,192.25	497.25
Rack 15	Network-Resilient-DC-Block-1-5	1,451.52	5,192.25	497.25
Rack 16	Network-Resilient-DC-Block-1-6	1,451.52	5,192.25	497.25
Rack 17	Network-Resilient-DC-Block-1-7	1,451.52	5,192.25	497.25
Rack 18	Network-Resilient-DC-Block-1-8	1,451.52	5,192.25	497.25
Rack 19	Network-Resilient-DC-Block-1-9	1,451.52	5,192.25	497.25
Rack 20	Network-Resilient-DC-Block-1-10	1,451.52	5,192.25	497.25

The report is based on measured data if available, otherwise adjusted nameplate values.

> **Energy charge back** - Shows the cost of energy consumption for specified equipment on room and customer level, for aiding charge back.

> **Calculations based on PUE** - Includes an overhead factor or Power Usage Effectiveness (PUE) for calculating actual energy usage.

> **Adapt to local costs** - Provides the option of calculating energy usage based on local costs and currency.

A DCIM product module

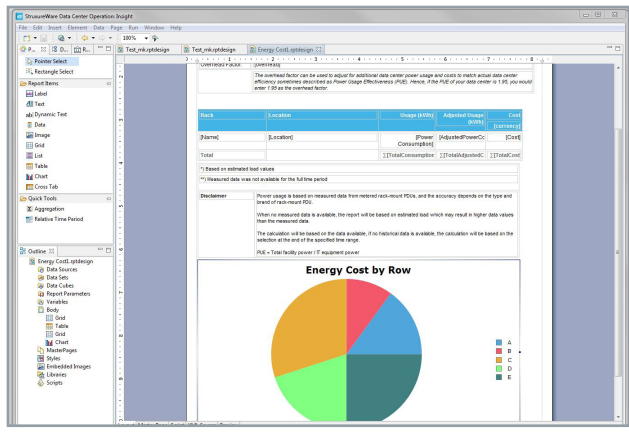
Energy Cost module provides an Energy Usage Report, which shows energy consumed within the data center by the kWh and cost per kWh, detailed to the rack level.

AT A GLANCE

> The energy usage is based on metered data, gathered over a specified period of time. If no metered data is available, estimated power draw will be calculated based on the power draw of the individual IT assets or nameplate values.

> The Energy Usage Report provides the option of including an overhead factor accounting for energy losses through Power Usage Effectiveness (PUE).

> The report can be customized based on optional groupings by use of tags, such as department, tenant, purpose, density etc.



StruxureWare Data Center Operation



Data Center Operation: Cluster Node

Provides a back-up node for resuming operation in the event of a disaster with the option to host DCIM software elsewhere.

Disaster recovery

You can configure an up-to-date backup recovery server in a remote location for resuming operation in the event of a disaster.

You can add a disaster recovery node to a clustered environment or to a stand-alone Data Center Operation server. However, disaster recovery requires a Cluster node for high availability and disaster recovery license.

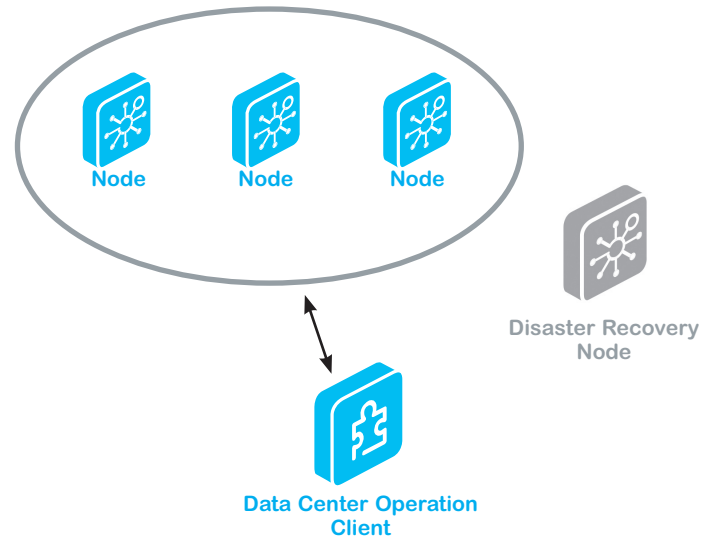
PostgreSQL streaming replication is used to move data to the disaster recovery node.

The connection between the Data Center Operation server or cluster and the disaster recovery node must be stable and quick enough to transfer a full backup

A DCIM enhancement option

The Cluster Node enables you to run Data Center Operation in a clustered environment with multiple servers, leading to improved performance. For improved data security, you can add an offsite disaster recovery node.

Cluster Environment



Cluster setup

When running Data Center Operation in a clustered environment, each node in the cluster (besides the initial Data Center Operation server) requires a Cluster node for high availability and disaster recovery license, ie. a cluster setup with 3 servers requires:

- > 1 x Data Center Operation license
- > 2 x Cluster node for high availability and disaster recovery licenses

Running Data Center Operation in a clustered environment requires low network latency. Therefore, it is generally recommended to have the clustered servers installed on the same data center site/subnet. All nodes in the cluster setup must have a static IP address.

If your setup includes a disaster recovery node, you can have a firewall between the cluster and the disaster recovery node.

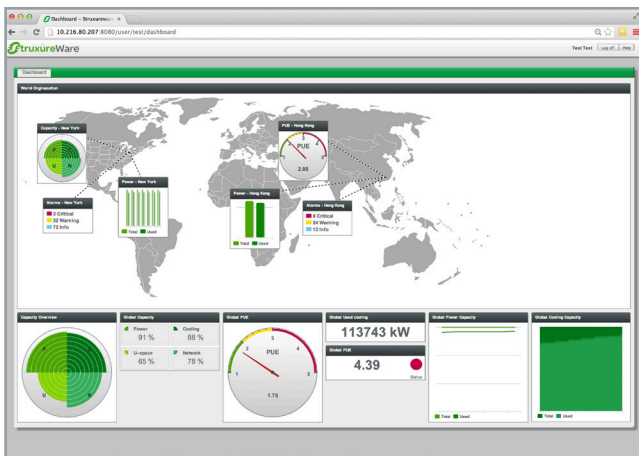
StruxureWare Portal



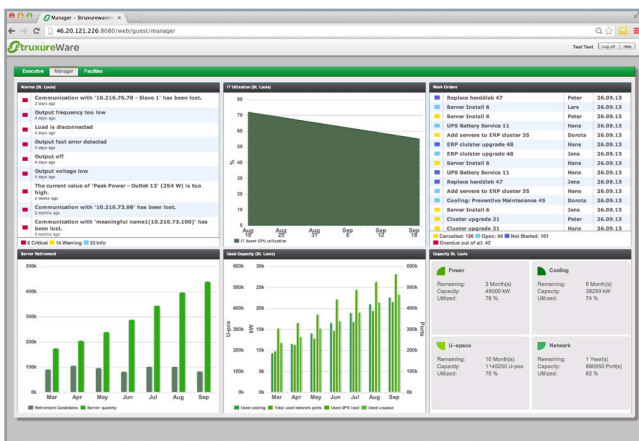
StruxureWare Portal

Easy-configurable web dashboards creating transparency to data center key performance indicators.

Choose between more than 20 data center metrics to create transparency and an instant overview of key data center information



The widgets displaying data center metrics can easily be re-used on the company's intranet or website.



A DCIM enhancement option

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.

AT A GLANCE

> The StruxureWare Portal is configured via a choice of predefined portlets, and provides the option to create custom portlets through an integrated, easy-to-use configurator. The portlets are based on a comprehensive and detailed charting library, enabling the user to easily add interactive charts and graphs to the display.

> Built on an open platform, the user-friendly interface allows anyone to quickly configure a dashboard showing management-level information.

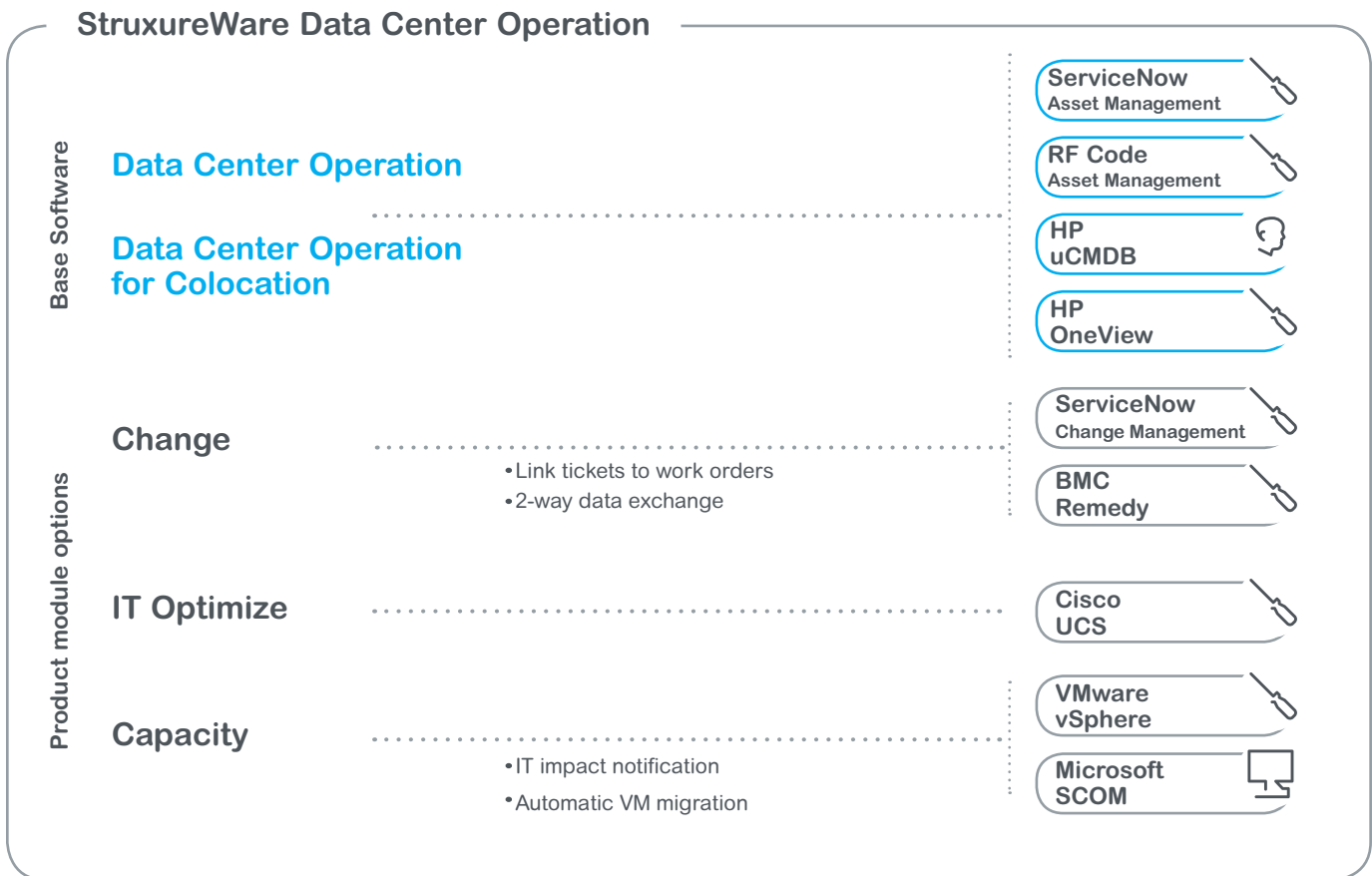
> The open source environment, based on the Liferay platform, provides the option to display web content and metrics from several applications, such as Data Center Operation, Power Monitoring Expert, Building Operation and Data Center Expert.

> Provides simple drag and drop functionalities that opens up for modifications to match individual customer themes, designs and brand guidelines.




> The application works in all modern browsers, as well as with Apple iPhone®, iPad®, and Android-based devices.

StruxureWare Data Center Operation

Integrations



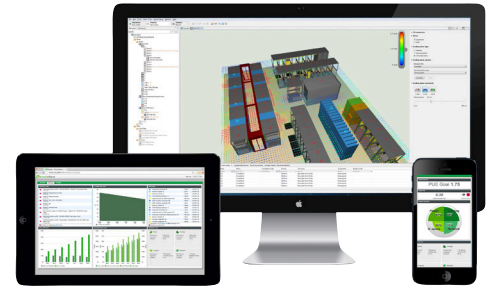
Integrations available via:

-  Download
-  Service
-  External System Configuration



Peace-of-mind software services

Schneider Electric™ offers a comprehensive portfolio of services to support and enhance our StruxureWare for Data Centers software. These services are designed to simplify deployment, reduce costs, and address your key concerns and challenges. Our software services provide you with peace of mind that your applications will receive the care they need to operate at optimal levels at all times.



Software Installation

- Ensures that all software products are installed correctly by a highly skilled field service engineer and are quickly ready for use in your dynamic data center.

Software Configuration

- Configures the system quickly and precisely to emulate your unique data center, in turn allowing you to make critical decisions that will save you time and money.

Software Support Contracts

- Ensures you stay up to date with the latest software releases and technical support

Software Enhancement

- Provides customized dashboards and enhanced reports to meet your business needs.

Solution Deployment Management

- Provides a single point of contact to oversee the installation, configuration, integration, customization, and enhancement of the DCIM software solution.

Software Preventive Maintenance

- Grants on-site visits to review, analyze, detect, and prevent system failures while optimizing the use of the DCIM tool.

Software Integration

- Provides planning, designs, and project management for the integration of StruxureWare for Data Centers software into your existing software or system, providing you with a customized view into your existing applications.

Software Education

- Offers hands-on training on key features, operational skills, and best practices, enabling you to get the most from your DCIM.

The Schneider Electric winning recipe for service excellence

Dedicated Resources

- Worldwide network of certified field service engineers
- Available 24/7
- Allows data center and facilities managers to focus on their day-to-day activities

Methodology

- Our technical statements of work follow a structured methodology of work procedures that adhere to industry best practices

Execution

- Deployment management
- Safety is a top priority
- Operation process compliance
- Scheduling

Tools

- Latest software updates
- Latest firmware updates
- Access to DCIM support
- HW equipment

Performance

- Fast and efficient service delivery
- Highly trained resources ensure StruxureWare for Data Centers is operating at optimal performance levels

For more information...

Additional Resources

Visit [white papers.apc.com](http://whitepapers.apc.com)

Read more about the technology and research behind StruxureWare for Data Centers.

> How Data Center Infrastructure Management Software Improves Planning and Cuts Operational Costs (#107).

> Avoiding Common Pitfalls of Evaluating and Implementing DCIM Solutions (#170).

> Virtualization and Cloud Computing: Optimized Power, Cooling, and Management Maximizes Benefits (#118).

> Guidelines for Specification of Data Center Power Density (#120).

> Allocating Data Center Energy Costs and Carbon to IT Users (#161).

> Estimating a Data Center's Electrical Carbon Footprint (#66).

View videos

Visit tv.schneider-electric.com to watch our StruxureWare for Data Centers videos and customer testimonials.

> www.youtube.com/user/SchneiderCorporate

> tv.schneider-electric.com

Read our Blogs

Discussing challenges and trends of DCIM, and inviting you to join in.

> Blog.schneider-electric.com/datacenter

Follow us on Twitter

For updates on all news on StruxureWare for Data Centers.

> www-twitter.com/StruxureWare_DC

Need additional information?

Check out our webpages or DCIMsupport for answers to your questions.

> www.schneider-electric.com/dcim

> DCIMsupport.apc.com

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