Data Center Infrastructure Management (DCIM)

StruxureWare Data Center Operation
StruxureWare Data Center Expert
In an environment of constant change

- Increasing availability expectations
- Cloud computing
- Virtualization
- Energy efficiency
- Increase density
- Regulatory requirements
- Dynamic power variation
- Metrics and reporting
- Server consolidation

Data center managers need accurate and timely information to make better decisions in real time.
Data center management challenges

Balance the demands of availability and efficiency through out the data center lifecycle
Require effective data center management

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 maturity model

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1: Basic</td>
<td>No integration; basic monitoring supplied with equipment. Health and safety.</td>
<td>95%</td>
</tr>
<tr>
<td>Level 2: Reactive</td>
<td>Software installed to monitor environment and equipment power use. Ability to adjust cooling to demand.</td>
<td>80%</td>
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<tr>
<td>Level 3: Proactive</td>
<td>Datacenter equipment characteristics, location and operational status tracked. Energy and environmental data used to reduce risks, waste.</td>
<td>30%</td>
</tr>
<tr>
<td>Level 4: Optimizing</td>
<td>Multiple IT and infrastructure subsystems integrated; data models used for prediction, service management, multiple views, optimizing in near real time.</td>
<td>5%</td>
</tr>
<tr>
<td>Level 5: Self optimizing, autonomic</td>
<td>Multiple IT and infrastructure subsystems integrated; data models used for prediction, service management, multiple views, optimizing in near real time.</td>
<td>0%</td>
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</tbody>
</table>
Schneider Electric’s DCIM Solution

A suite of modular and integrated DCIM software tools that enable effective data center management.
StruxureWare for Data Centers

Function

- Resource Advisor
- Data Center Operation
- Data Center Expert
- Power Monitoring Expert
- Cooling Monitoring Expert

Capability

- Track and manage enterprise energy and carbon costs
- Manage Data Center assets, operational and capital costs
- Monitor and control Data Center power, cooling and security
- Advanced power monitoring, analysis and power quality
- Advanced cooling monitoring and automation
What professionals say…

MAIN REASONS FOR INVESTING IN DCIM

- Better Management of data center capacity (Power, Cooling, Space) 73%
- Better visibility and management of assets and status
- Identifying problems that could threaten availability
- Reducing energy consumption
- Increasing utilization of IT assets

Schneider a leader in the DCIM market

“According to IDC analysis and buyer perception, Schneider Electric is an IDC MarketScape Leader worldwide.”

"IDC: MarketScape: Worldwide Datacenter Infrastructure Management (DCIM) 2011 Vendor Analysis”
Katherine Broderick, IDC
January 2012
Business Benefits

- It is difficult to achieve the more advanced levels of datacenter maturity, or of datacenter effectiveness generally, without extensive use of DCIM software (451 Group, 2011)
- Energy savings from well-managed data centers can reduce operating expenses by as much as 20% (Gartner, 2010)
- One integrated system bridging the gap between Facilities and IT
- Plug’n’Play data center key performance indicators on web and smart phone dashboards
- Typical solution payback is less than 12 months
StruxureWare Data Center Operation

A new level of business intelligence for your Data Center Infrastructure Management (DCIM).

- Simplified, integrated management
- Proactively optimizing the data center life cycle
- Removing silos & creating energy awareness across the entire data center

From floor, to cage, to rack, to server & VM
The modular setup

Data Center Expert is the preferred data center monitoring platform for the solution.
Data Center Expert

End to end data centre monitoring and control of power, cooling, environment and security from the building through IT systems

- **Multi-vendor monitoring**
  - Monitor any device on the network from any manufacturer

- **Real-time device monitoring**
  - Immediate fault notification and real-time data for modelling, reporting and analysis

- **Intelligent alerting**
  - Minimise response time with pre-set or customizable alerts so the right alert goes to the right person at the right time
  - Copy and paste alerting preferences from one set of devices to another

- **Centralised view**
  - Centralised data repository and unified view from anywhere on the network

- **Auto-discovery**
  - Reduce the time needed to install & deploy physical infrastructure devices by automatically detecting manageable devices on your network

- **Mass configuration**
  - Create, save & push configurations & device settings to APC devices with a NMC

- **Graphical trending analysis**
  - Access current, historic and future trends for any device or group of devices. Plot and graph multiple data points in a logical correlation to visualise potential hazardous trends
Data Center Operation

Asset management and documentation of data center operations through inventory management

- **Inventory management**
  - Shows device data within the physical layout for instant access to device details and asset attributes, and overview of data center operations.

- **Alarms within physical layout**
  - Provides real-time device failures within floor layout and rack front view for live status of data center operations.

- **PUE/DCiE calculator**
  - Provides Power Usage Effectiveness (PUE) or Data Center infrastructure Efficiency (DCiE) value for information on daily utilization of energy.

- **Network management**
  - An overview of the data center network paths and their interconnections, provided through guided input for reduction of human error.

- **Global asset search**
  - Quickly locate assets through free text search and export equipment data to excel format

- **Mobile data center operations**
  - Integrates with Operation Mobile for access to StruxureWare Operation on the go via the Motorola MC75 handheld PDA.

- **Live dashboard**
  - Gain transparency to data center key performance indicators through easily configured web dashboards, displaying customizable management-level information.
Data Center Operation for Co-lo

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

- **New! CAD integration**
  - Enables import of CAD drawings in order to quickly reshape the room and convert CAD cage drawings into the DCIM model, including toggle CAD layers to show all available facility information

- **New! Integrated tenant billing**
  - Imports tenant and billing account data from the CRM system for integrated billing support on sold and used power and footprint.

- **New! Measured cage power**
  - Enabling detailed charge back to individual tenants through an easy overview of sold and measured power.

- **New! Tenant impact analysis**
  - Map tenant assets on a room, cage, rack or server level for an in-depth understanding of tenant impact in the event of an outage

- **New! Cage visualization**
  - Visualize current available space with anonymous tenant data during the pre-sales phase for planning potential new customer cages, reserving space and supporting the sales process

- **New! Multiple rooms**
  - Instant Provides the option to display multiple rooms on the same floor plan to accurately depict and navigate large facilities
Data Center Operation: Capacity

Simulation, planning, and optimization of infrastructure capacities to right-size the data center

- **IT equipment guidance**
  - Instant server placement recommendation through real-time analysis of available data center capacity.

- **Virtualization capabilities**
  - Integrations with VMware vSphere and Microsoft System Center Virtual Machine Manager
  - Combines information from the IT layer and the physical infrastructure layer, enabling data center managers to automatically migrate their impacted virtual machines from an impacted host server to a healthy host server.

- **Available capacity**
  - Global view of available capacity within an organizational context, providing an instant calculation of actual space, power and cooling consumption, power and network port availability and floor and rack weight limits against overall data center capacity constraints.

- **Business impact**
  - Shows the consequence of device failure on data center infrastructure equipment for instant identification of critical business application impacts.

- **3D airflow analysis**
  - Simulate any cooling scenario in your data center, instantly visualizing the cooling effect on your infrastructure for easy identification of overcooling and hotspots.
Data Center Operation: IT Optimize

Reduce IT system energy usage through in-depth optimization of server utilization for increased data center performance

- **IT power and utilization monitoring**
  - Determine the business usefulness for all IT assets helps eliminate underutilized servers and maximize IT capacity at the rack, row and room level.

- **Track underutilized servers**
  - Reduce costs by eliminating unnecessary servers and maximize efficiency and rack capacity.

- **Server usage chargeback**
  - Enables businesses to capture and assign IT costs to individual departments for accurate billing support down to the physical or virtual server level.

- **IT asset auto-discovery**
  - Saves time and increases accuracy of your managed asset inventory.

- **Auto-association**
  - Shows increases accuracy and saves time by auto-associating discovered IT devices with the inventory, based on properties such as make, model and IP address.

- **Genome™ library**
  - The continuously growing asset library enables the software to determine power consumption without the aid of hardware sensors.
Data Center Operation: IT Power Control

Rack-level power capping for an optimized performance of server applications

- **New! Rack-level power capping**
  - Providing an optimized infrastructure and delayed physical equipment investment.

- **New! Continual availability**
  - Operate the data center closer to the capacity limit without compromising availability and safety margins.

- **New! Increased rack densities**
  - Deploy power capping of servers and racks, and reduce over-provisioning through better utilization of existing physical infrastructure

- **New! Rack-based policy configurations**
  - Redistribution of power density according to criticality levels are easily implemented, ensuring power savings and delayed physical equipment investments.

- **New! Business continuity**
  - In the event of a UPS failing, power capping ensures that business critical racks and servers maintain their power supply and no breakers are inadvertently tripped.

Powered by Intel DCM
Data Center Operation: Change

Fully integrated workflow management for your IT physical infrastructure

- **Automated work order process**
  - Create work orders and automatically generate tasks to move, add or change IT and infrastructure equipment.
  - Schedule, assign and track the status of itemized tasks to implement changes in the data center.

- **Change management overview**
  - Interactive interface showing past, future and pending changes to assist with resource and workload balancing, avoiding scheduling conflicts.

- **BMC Remedy integration**
  - Ensure relevant information is shared and flowing between Operation Change and the market leading process management system.

- **Maintenance scheduling**
  - Facilitate scheduling of service and equipment maintenance to ensure visibility to all service plans and avoid scheduling conflicts.

- **Space reservation**
  - Reserve rack space for new equipment to be installed quickly and easily.

- **Asset audit trail**
  - Track asset moves, adds and changes by date/time, owner and work orders for view, print and export.

- **Customizable templates**
  - Specify the activities required to fulfill the needs of the individual work order, ensuring organizational policies and projects are easily applied to moves, adds and changes.
Data Center Operation: Energy Efficiency

Intelligent PUE/DCiE analytics at subsystem level

- **Energy efficiency analysis**
  - Provides current and historical PUE/DCiE values based on the current IT-load for a fact-based understanding of energy efficiency at the facility level.

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

- **No measured data required**
  - Utilizes measured or modeled data, allowing for usage with few or no power meters.

- **Multi-vendor data integration**
  - Enables integration with 3rd party enterprise and building management systems, such as TAC Vista, for data gathering and customisation, and integration of PUE/DCiE calculations.

- **Web-enabled interface**
  - Created for easy integration with 3rd party web page through an open platform.

- **PUE/DCiE report**
  - Provides a report on current and historical PUE/DCiE values, showing the effect of changing seasons, suitable for both internal and external display.
Data Center Operation: Energy Cost

Instant overview of rack energy usage

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

- **Energy usage report**
  - Enables accurate cost analysis of energy use on a kW/h basis, detailed to the rack level.

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

- **Measured or nameplate data**
  - The report is based on measured data if available, otherwise adjusted nameplate values.

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

- **Adapt to local costs**
  - Provides the option of calculating energy usage based on local costs and currency.
Custom reporting tool
- Advanced report designer that allows you to design any report within minutes using drag and drop functionalities.

Large set of templates
- Choose between a large selection of report templates, or design your own customized report and save it for future use.

Report building with external data points
- Allows building of reports that combine StruxureWare Operation data with any external data points obtainable via web services or databases.

Reporting capabilities
- Transparency of key performance indicators in your data center.

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

Open platform
- Supported by a large op source community through its Eclipse BIRT origin, Operation Insight has access to increasing numbers of online templates, plugins, tutorials and stylesheets.
Data Center Operation: VIZOR

View high level values of data center utilization on your smart phone or tablet

- **Graphical overview**
  - Graphical overview of power, cooling, space, and network on a weekly, monthly, or yearly basis.

- **Barcode scan functionality**
  - Barcode scanning option for easy identification of assets

- **Remaining capacity calculation**
  - Drill down view into any location or room and predictions of remaining capacity based on growth rate.

- **Capacity chart**
  - High level values of data center utilization at a glance

- **KPI Overview**
  - Shows key performance indicators on power, cooling, space, and network within the data center

Data Center Operation: VIZOR is currently available on Apple iPhone, iPad, and Android based devices.

Available on the App Store
Data Center Operation: Mobile

Wireless operation of your data center

- **Mobile alarms**
  - Provides alarms, alarm descriptions and recommended actions for data center operations on the go

- **Wireless mobile access**
  - Work online or offline to access work orders and asset data whilst on the move

- **Mobile device moves**
  - Eliminate manual data entry and reduce errors by adding, moving & retiring devices

- **Mobile work orders**
  - View work orders and immediately update status as you complete tasks

- **Mobile barcode asset search**
  - Quickly locate bar-coded assets via the search functionality using the optional StruxureWare Operation Mobile

- **Rack audit**
  - Perform instant inventory management through view of rack content and history

- **Offline mobile synchronization**
  - Keep your physical data center synchronized with your StruxureWare Operation Mobile
StruxureWare Portal

**Portal**
Web site that aggregates information from diverse sources in a unified way

**Interfaces**
Facilitate portlet communication with external resources
- EcoStruxure Web Services
- Weather
- Data Center Services
- Etc.

**Portlets**
Pluggable user interface components that are managed and displayed in a portal

**Themes**
The look & feel of the portal/portlet, in this case, aligned to StruxureWare Guidelines
StruxureWare for Data Centers Services

Implementing the StruxureWare for Data Centers Services

**Software Installation**
Installation and registration of your newly purchased Schneider Electric Management product in accordance to manufacturer specification fulfilled by highly skilled field service engineers.

**Software Configuration**
Ensuring most value for your new investment in an Schneider Electric Management product by quickly and precisely configuring the system to suit your specific business needs while utilising the full capabilities of the product.

**Software Education**
Get the most from your investment by learning operational skills and best practices. Our professional trainers will teach your staff on location.

**Software Integration**
Provide planning, design and project management for the integration of an Schneider Electric Management product into your existing software or system.

**Software Maintenance**
Make sure your investment says current. Our software support services provide in depth technical support and software updates making sure your products stay current.

**Software Enhancement**
Not all computing environments are the same. Customise our products by working directly with ours senior software engineers turning products into "solutions" within your new or existing computing environment.
Solution Benefits

- Leading DCIM platform recognized by the analyst community
- Instant overview of data center inventory and real-time device alarms
- Increase CapEx through planning and optimizing physical infrastructure capacities
- Reduce energy usage through optimization of server utilization
- Improve PUE through insight into energy efficiency, usage and losses
- Certified field service engineers ensure worry-free implementation
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