SIEMENS

Bridging the gap for optimized efficiencies and smarter decisions

Datacenter Clarity LC helps IT and facility teams improve operating efficiency and asset utilization.

Solutions for Data Centers

www.usa.siemens.com/dcim

Optimized efficiencies, smarter decisions

Bridging the gap between IT and facility management is an essential component to business success in a data center. With advanced monitoring and management solutions, you can ensure demand control and provide transparency for mission-critical facilities.

The data center infrastructure management solution from Siemens, Datacenter Clarity LC™*, provides the appropriate tools and allows you to accurately and efficiently manage your infrastructure based on informed decisions.

*Datacenter Clarity LC is a trademark owned and licensed by Maya Heat Transfer Technologies Ltd.

Challenges for today's data centers

Data centers face many challenges, ranging from huge data growth and the development of modern IT services, such as cloud computing, to requirements for safe and resilient data centers.

In addition, there is a growing need for better energy efficiency. Data centers use up to 40 times more energy than the companies for which they provide services. With advancing technologies, densities within data centers have increased, resulting in increased demand for efficient cooling. The amount of energy needed, as well as the associated costs, are increasing as well.

A data center infrastructure management (DCIM) system provides a single, comprehensive view into both IT and facility management – two areas previously managed independently. Implementing a DCIM solution allows data center owners to efficiently leverage existing synergies. Datacenter Clarity LC is a software solution package designed specifically with data centers in mind. It includes tools for planning and simulation, asset management, power monitoring, and more. These tools allow for planning, monitoring, measuring, managing, and controlling the use and energy consumption of IT-related equipment and facility infrastructure components.

The software runs independently from other management software and communicates with devices throughout the data center. Vendor-neutral integration is provided via open protocol interfaces. Features and metrics may be customized to suit the needs of data center owners and operators.
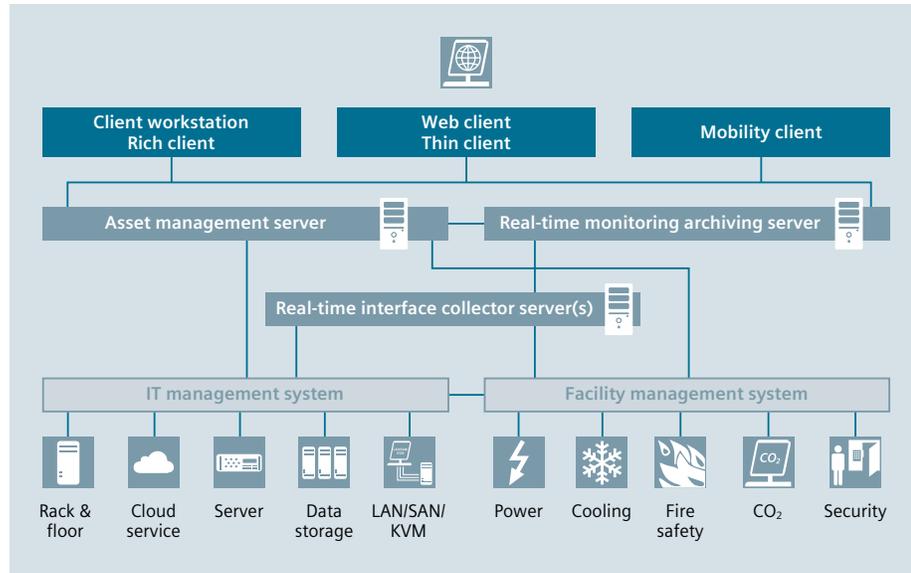
Highlights

- Bridges the gap between IT and facility management
- Creates transparency to monitor, measure, and manage, allowing for smarter decisions
- Manages complex data center environments effectively and efficiently

Datacenter Clarity LC simplifies the complexity of asset management and provides desired performance monitoring.

– Provides operational cost information to allow decision-makers to quickly assess impact on bottom line
– Supports green initiatives with energy efficiency dashboards
– Allows for viewing of assets availability metrics to assist in predicting outages
– Enables data center managers to meet business growth initiatives with the ability to deploy IT assets in less time

Datacenter Clarity LC

IT management	Facility management
Asset management system	Building management systems
Work order system	Energy management
Customer relationship management	Power quality management
Cloud service management	Fire Safety/Security management
…	…

Client workstation
Rich client

Web client
Thin client

Mobility client

Asset management server — Real-time monitoring archiving server

Real-time interface collector server(s)

IT management system

Facility management system

Rack & floor	Cloud service	Server	Data storage	LAN/SAN/ KVM	Power	Cooling	Fire safety	CO_2	Security

Bringing clarity
to your data center

Efficiency tools for decision-makers
Datacenter Clarity LC leverages state of-the-art engineering software tools and puts them in the hands of decision-makers so they can optimize equipment placement and energy consumption. In doing so, the availability and longevity of the infrastructure can be increased.

Visualize your performance
The Datacenter Clarity LC reporting solution leverages managed assets to provide a complete performance management tool. Reports are presented by displaying virtual 3D views of your data center infrastructure and overlaying these with real-time operational data.

With the ability to intelligently link IT and facility assets with business- and performance-related metadata, you have all the information you need to make smarter, more informed decisions about your data center operation.

Support through the entire life cycle
The asset management solution lets you view your IT-related equipment and managed data in a 3D representation of your facility. A single source of equipment, asset, and process information will help you make smarter decisions and better plan your workflows.

With this asset management system, you can create long-term workflows that support data center management frameworks, as well as changes in infrastructure, such as migration, consolidation, expansions, and new facilities.
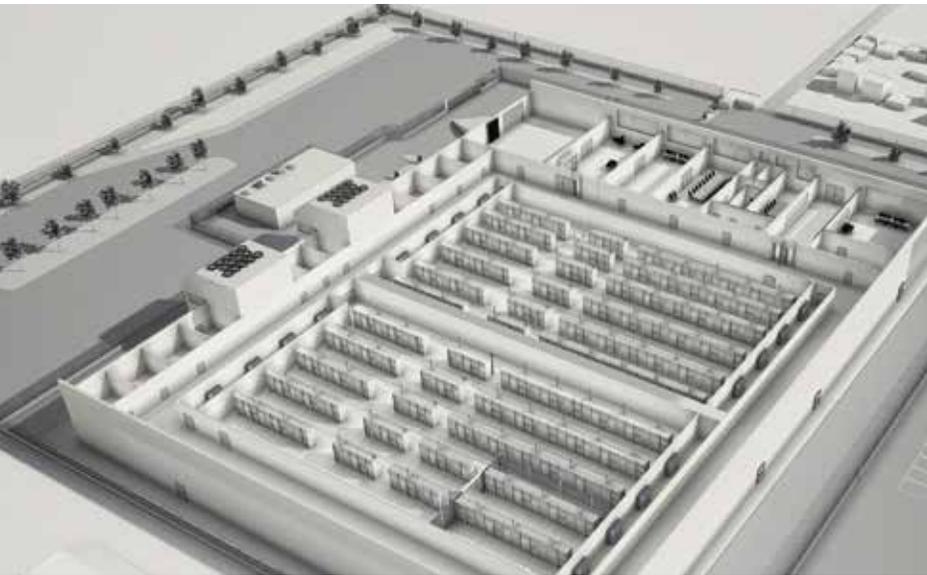
DCIM sector composition
– 55% Monitoring (power, environmental)
– 34% Asset, configuration management
– 10% Cooling optimization, environmental management
– 1% Operational CFD analysis

Source: 451 Research (2014):
Data center management software: DCIM and DCSO

Real-time, minimal risk

Datacenter Clarity LC offers a complete real-time picture of asset attributes in 3D, as well as powerful tools to determine the most efficient data center configuration possible during capacity planning.

With its computational fluid dynamics (CFD) analysis technology, the solution uses managed assets to provide accurate temperature and airflow predictions. This lets you identify inefficient devices and hot spots prior to implementation and upgrades.

Simulation can be used to modify your data center facility infrastructure in a no-risk virtual environment to perform "what if" scenarios before you commit to actual changes.

Accommodate changes easily

With its modular design, planning, and operation simulation capabilities that are based on real-time data, Datacenter Clarity LC easily accommodates rapid changes of today's data centers, while also protecting your long-term investments.

Established technology, future-proof architecture

Datacenter Clarity LC is built on the proven foundations of the product lifecycle management (PLM) software from Siemens, which has over 7 million licensed users. Its open API architecture facilitates interoperability and, as a vendor-neutral solution, supports more than 400 protocols from both IT and facility perspectives.
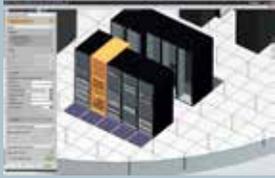
Highlights

- Real-time picture of asset attributes in 3D
- CFD analysis for airflow predictions
- Protection of long-term investments with simulations, based on real-time data
- Future-proof, open architecture

Datacenter Clarity LC
Key features

Infrastructure lifecycle management

– Manages equipment change process
– Offers inventory management and report
– Updates library of predefined IT and facilities equipment regularly
– Links and manages IT and building assets
– Includes end-to-end power chain and cooling chain
– Runs "what if" scenarios to allow for infrastructure optimization
– Searches for assets
– Provides information for users to determine optimal location for physical infrastructure and rack-based IT equipment
– Provides dynamic capacity planning (DCP) simulation to validate actual facility loads with infrastructure sizing to determine rate of growth
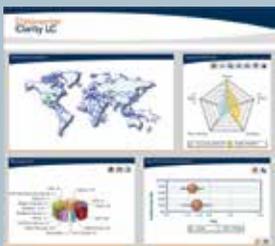
Collaboration and process management

– Tracks and troubleshoots data center issues
– Analyzes the impact of future moves, additions, and changes
– Creates customized workflows
– Manages project schedules, planning, and resources
– Includes maintenance management
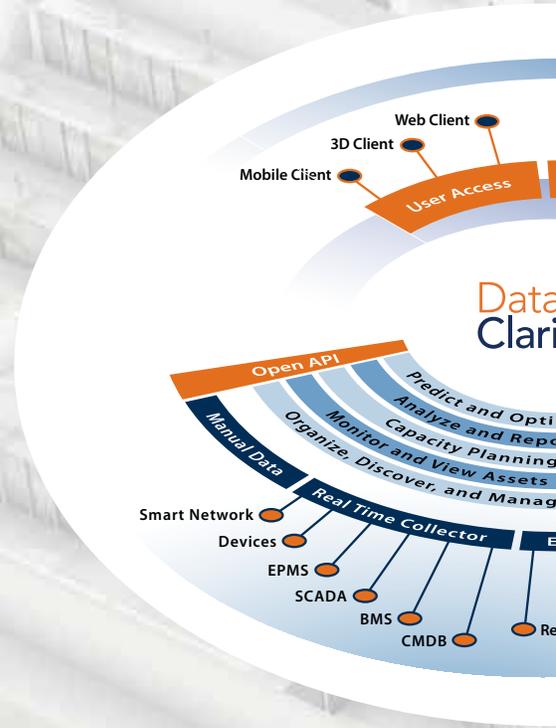– Allows change requests

Key performance indicator dashboard

Provides quick, simplified reporting, including:
– Company CxO level dashboards
– Drill-down views at specific locations
– Metrics and KPIs
– Power Usage Effectiveness™ (PUE)
– Water Usage Effectiveness™ (WUE)
– Carbon Usage Effectiveness™ (CUE)
– Rack Cooling Index™ (RCI)
– Data Center Infrastructure Efficiency™ (DCIE)

Power management
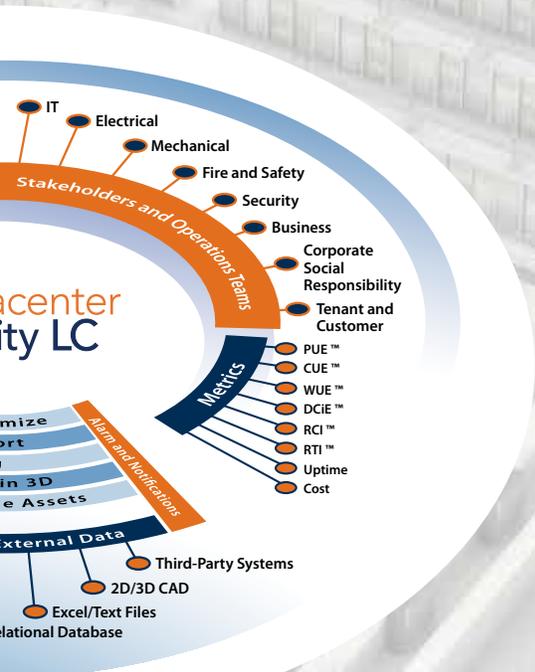
– Tracks and
– Identifies
– Manages

Web Client

– Centralize
– HTML5-ba compatibl
– Intuitive i
– Zero-footp
– Asset and the 3D mo
– Real-time visualizati
– Network o
– Managem
– User acces
– Managem

[Power management]

– [...]d manages power connections
– [...] upstream and downstream connectivity
– [...] capacity and predicts shortages

Datacenter
[Clar]ity LC

IT
Electrical
Mechanical
Fire and Safety
Security
Business
Corporate Social Responsibility
Tenant and Customer

Stakeholders and Operations Teams

Metrics
PUE ™
CUE ™
WUE ™
DCiE ™
RCI ™
RTI ™
Uptime
Cost

[Opti]mize
[...]port
[...]n in 3D
[...]e Assets

Alarm and Notifications

[E]xternal Data
Third-Party Systems
2D/3D CAD
Excel/Text Files
[R]elational Database

[...]

– [...]d access to all Datacenter Clarity LC logs
– [...]ased cross-device and cross-browser
  [...]le Web client
– [...]nterface for 2D and 3D navigation
– [...]print client installation
– [...] usage information directly within
  [...]odel
– [...] temperature monitoring and heat map
  [...]on
– [...] connections and cable management
– [...]nt of asset and equipment database
– [...]ss management
– [...]nt of Datacenter Clarity LC configuration

Network management
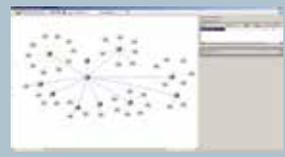
– Tracks and manages network connections
– Identifies upstream and downstream connectivity
– Manages VLANs
– Quickly locates available copper and fiber ports
– Manages capacity and predicts shortages

High-definition asset visualization

Generates key views, including:
– Floor layout
– Rack elevations
– Operational dashboards in high-definition 4D
– Intelligent tags

Computational Fluid Dynamics (CFD)
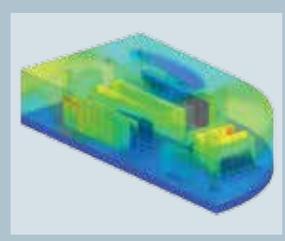
– Resolves all airflow and heat transfer physics virtually
– Determines the most energy-efficient configuration before implementation and upgrades
– Predicts temperature and airflow
– Identifies inefficient devices and hot spots

Open interface and protocol support

– Supports more than 400 communication protocols
– Includes advanced IT monitoring interfaces
– Provides an open API for enterprise software integration and customization
– Offers built-in mobile application

Real-time monitoring, alarms, and notifications

– Configures alarms on any monitored point of any asset
– Receives e-mails and SMS notifications
– Triggers workflows and task assignments automatically
– Keeps logs of event history
– Visualizes alarm events in 3D or tabular format
– Monitors and collects low-level infrastructure data in real time to enable intelligent analysis by individuals with domain expertise
– Monitors physical security

Datacenter Clarity LC
meets your challenges

Datacenter Clarity LC supports your day-to-day data center challenges by providing a wide spectrum of capabilities.

HD4D reporting
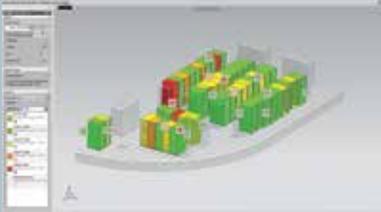
Datacenter Clarity LC offers a rich 4D reporting tool kit, with out-of-the-box reports that can be utilized for planning and operational purposes and are a key to operating a data center at its maximum efficiency. This tool kit includes information about the temperature, status, category, age, date information, numbering information, real-time information, or even business or client information, which can be overlaid on the 3D model.

Locating an asset

You can search for assets directly from the 3D models. The assets can be searched by ID, name, category, and type. It is possible to filter by status or serial number, or directly by entering the host ID. The searched assets can be seen highlighted in the model, and you can navigate to them very quickly.

Asset creation
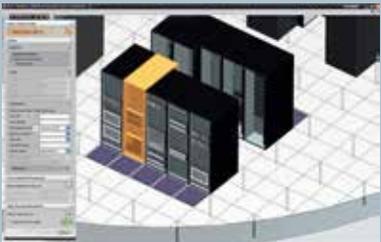
To create a new asset, you can first isolate the group of racks where the least amount of power is consumed. Afterwards, the asset can be created directly from the interface, and you are able to choose properties to customize the characteristics of the new asset. You can see the asset immediately being added inside Datacenter Clarity LC.

Real-time monitoring

You can receive a wide range of information in real time. Datacenter Clarity LC allows you to view real-time alarm visualization and real-time power visualization, as well as real-time server CPU temperature (WMI and/or SNMP and/or IPMI interface calls would allow both power and CPU temperature to be obtained in real time, as well as other IT-relevant metrics).

Key performance indicator dashboard

The high-level dashboard delivers aggregated, complete information. You are able to scale from one single data center to dozens of them being monitored from one central location if desired. Beside the information about power capacity, U space, floor space, and cooling, you can also view the PUE and other KPIs, such as DCIE, CUE, WUE, and real-time, up-to-the-minute CAPEX and OPEX costs.

## Real-time device-level dashboard

Datacenter Clarity LC allows for each asset to have its own real-time monitoring dashboard so you can access real-time information at any time. You can look at the minimum and maximum values and average and trended data over any time period you wish. This information is also available on a mobility app and is compatible with any operating system. From a touch screen or clicks on a Web access, it is very intuitive and you can get all of the real-time information that you desire.

Electrical connections

With the electrical connection viewer, you are able to identify which servers are connected to each UPS. By selecting the UPS that will be affected, it is possible to see all the PDUs (power distribution units) that are powered by this specific UPS and to identify the servers associated with those PDUs.

Advanced real-time monitoring
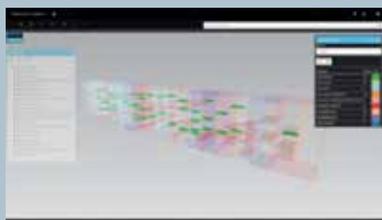
Datacenter Clarity LC allows managers to increase the efficiency of their data centers through advanced real-time monitoring:
– Maximizes space and power capacity to increase revenue
– Allows you to gain income through accurate consumption monitoring, allowing detailed customer charge back
– Reduces cost through energy and space savings without impacting service quality
– Allows segment asset visibility by user role and sets permissions for detailed and specific customer reports

Generate new business by offering colocation customers added value:
– Gives customers access to real-time and web-based power, bandwidth, and temperature information
– Provides full billing transparency
– Provides maximum flexibility: support for more than 450 communication protocols

In addition, Datacenter Clarity LC's competitive user-based pricing (unlimited number of assets and sites) is the most cost-efficient model for colocation centers where multiple resources are monitored, typically, by a few users.

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Network management
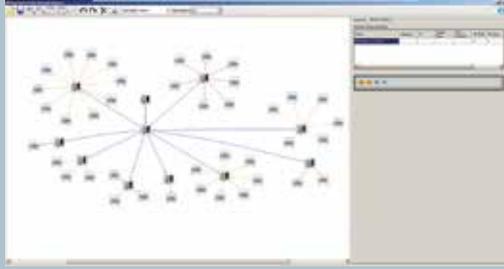
Out of the 3D model, you can view the entire port table and connection table of an asset directly. This makes it possible to find empty connection ports and make automatic connections between assets. Furthermore, you are able to view all the connections of a row, isolate a certain VLAN or a certain chain of connected assets, and investigate the port table for the specific assets. Furthermore, you can see the number of cables that are available, as well as which are used, connected, or not connected for the entire network within the cable folder.

Workflow management

You are able to create customized workflows within Datacenter Clarity LC. With this, you will always have an overview of the project schedules, the planning, and the involved resources. The workflow management also includes maintenance management, where assigned workflows are released when maintenance is necessary.
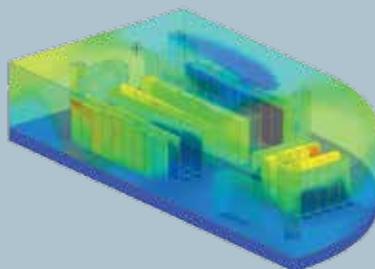
Security level configuration

With DCIM graphical user interface (GUI), you can configure different security access levels. The different security access privileges can be set up through:
– Site locations
– Site groups
– Specific users
– Projects
– Roles
– All of the above and more
  (down to specific assets if needed)

Computional Fluid Dynamic (CFD)

With CFD calculations, you are able to virtually observe heat and airflow throughout your data center to detect hot spots and identify any loss of cool air. This information will allow you to ultimately optimize your data center to save energy and costs.

Integrated Solutions

Power Distribution

Totally Integrated Power

Building & Energy Management

Fire Safety

Security Solutions

Services

Data Center Infrastructure Management

Maximum uptime with integrated solutions

Global expertise for your business
Siemens provides comprehensive solutions for data centers, supported by more than 7,000 technicians worldwide. Whether for new construction or modernization, you benefit from our expertise from projects executed all over the world.

Green data centers
As the world's largest provider of green technologies, Siemens is at the forefront of reducing the global carbon footprint. Our environmental portfolio helps reduce carbon emissions, as well as reduce your PUE.

Physical security
By offering fully-integrated security solutions, Siemens ensures the security of the data, the building, and its assets. From the perimeter to the rack, we provide security solutions that reduce the risk of security breaches, thereby reducing reputational losses and safeguarding your business' bottom line.

Cooling, BMS, and HVAC
Our integrated building management and monitoring systems help maintain the computer room areas within precise environmental conditions, with the optimal use of free cooling and alternative energy applications.

Power
The medium- and low-voltage portfolio from Siemens has been specifically designed to meet the demanding requirements in data centers, providing data centers with tailored, reliable, and consistent end-to-end power distribution solutions.

Fire safety
Fire safety solutions from Siemens are tailored to the specific data center environment and fire risk profile. Our solutions reduce the risk of wide-spread fire, utilizing the highest detection speed and accuracy, matched with preventive maintenance and improving the response effectiveness.

Data center infrastructure management
Bridging the gap between IT and facility management is an essential component to business success in a data center. Our advanced monitoring and management solutions ensure demand control and provide transparency for all mission critical facilities.

Highlights

- Energy efficiency optimization with green portfolio offering
- Complete data center portfolio
- Project support for new build and modernization
- Ensuring maximum uptime and availability

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