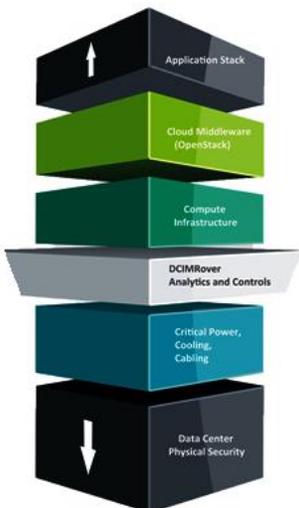


DCIMROVER™ CPX

Data Center & Cloud Platform Energy Manager



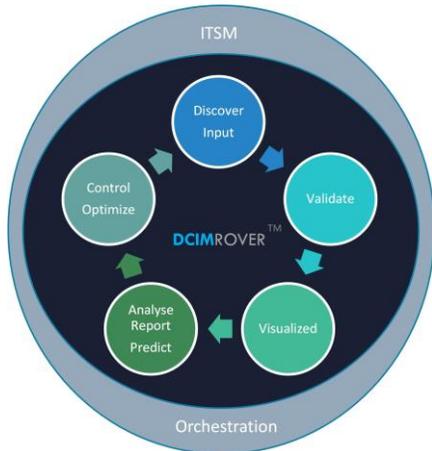
DCIMROVER™: End-to-End Data Center Power Monitoring, Analysis and Control

- An Innovative technology embodiment which enables Data Center energy monitoring, control and analysis. It controls IT Infrastructure power based on real-time operation conditions and economic-focused policies
- Agentless, it enables optimization of space, power and cooling in the Data Center
- Holistic view of Data Center energy usage across both IT and Facility disciplines
- Real time thermal and power data analysis and trends across the Data Center.
- Workload-aware intelligent power capping feature
- Enables server consolidation, ghost server removal and eliminates hotspots in the Data Center

DCIMRover: Energy Analyser and Director

Energy costs are the fastest-rising expense for today's Data Centers. Power consumption is one of the top concerns for enterprises and managers of Data Centers. Managing power usage is complex. IT facility and power distribution consume more than 65% of the energy in a Data Center, while servers consume most of the energy used by IT. Facility teams may be tasked with measuring and managing power at rack and power distribution unit (PDU) levels, but often have little visibility into server consumption. Many servers model use 60 percent of their maximum power while sitting idle. Moreover, there are multiple proprietary power measurement and control protocols supported by different solution providers, which make it challenging to have a single solution for power management across all devices in the Data Centers.

DCIM Data Science Process

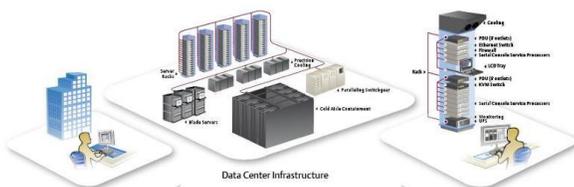


DCIM MANAGEMENT AND OPERATING MODEL

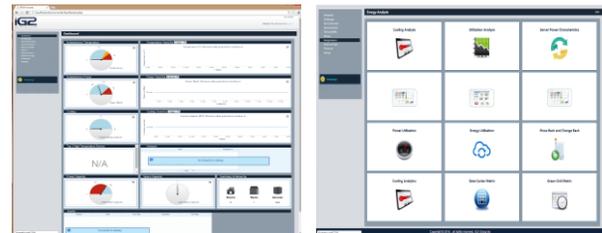
DCIMRover™ brings it all together, by combining visibility and control of IT facility and IT Infrastructure, energy and thermal footprints into a single dimension and space. It also provides a policy-based control engine which enable operators to optimize power usage and ensure safe and reliable sustained operations.

Gain Control of Data Center Power with Data Science

DCIM offers organizations the single pane of glass needed to continuously improve Data Center performance. It enables organizations to collect, analyze and manage information about a Data Center's assets, resource utilization and operational status so they can control and optimize the environment more effectively.



Key Features



DCIMROVER™ MANAGEMENT CONSOLE

- **Built** on Intel DCM Manager Technology
- **Agentless:** Does not require the installation of any software agents on managed or monitored devices
- **Power Monitoring:** Provides real-time, accurate power and energy consumption data, enables the planning and management of power distribution, usage, metering, overall efficiency analysis and cost
- **Thermal Monitoring:** Provides real-time location based thermal data, enables management of datacenter hotspots
- **Increasing Rack Density:** Maximizes server count per rack in a fixed-rack power envelope for increased datacenter utilization
- **Right-size Cooling:** Optimize cooling, based on power consumption, with direct cooling heat exchangers.
- **Power Optimization:** Optimizes power profiles per server, rack, and floor or workload and application, and reduces electricity costs.
- **Intelligent Power Capping and Control:** Policy-based device and group power capping, based on thresholds, time or event.
- **Historical Trending:** Logs power and thermal data with trending, time-sequence and work-load profile trends
- **Energy Analytics:** Real time analysis of power and energy. PUE, DCIE and IT power consumption factors
- **Extensive Support:** Supports most IT hardware; mechanical and electrical systems and cloud orchestration engine (OpenStack Ceilometer)
- **Ease of Deployment:** Available as an application or a virtual appliance or a physical appliance
- **OPEN –** Web Service API for ease of integration into management console
- **Robust and Reliable:** Built on Intel's SDK, with Intel. Available in a field tested rugged appliance format
- **Scalability:** Capable of managing tens of thousands of IT equipment
- **Integration:** Exposes high-level web services API (WSDL)
- **Security:** Secure communication with managed nodes. Encryption of all sensitive data

DCIMROVER™ Datacenter Energy Analyser and Manager

Functions	Features	Description
Datacenter Management	Data Center Layout and Hierarchy Management	Floor, Rack and IT equipment layout for power, energy and thermal profiling of the Data Center
	Device Discovery	Discovery, Rank and Classify Datacenter equipment; This includes Mechanical, Electrical and IT equipment
	Site Visualization	Pictorial view of the as-running Data Center
	POD and Rack Visualization	Visualization of POD or Rack as per availability zone; ideal for Cloud Fabric infrastructure in the Rack-scale architecture
	Device Management and Ranking	Manage device energy footprint
	Device Grouping	Group device for Service-based operation and management
Monitoring and Operations	Dashboard	A holistic view of the Data Center power, temperature and overall Data Center efficiency matrix (PUE and DCIE)
	Power and Temperature Historical Trends	Power and Temperature trends (24 hrs, and historical, default to one year)
	Events	Device events and policy based threshold event. SNMP enable and can be integrated in RestAPI ITSM or DevOps service management tools
	Power Estimation	Mathematical estimation for devices power without power monitoring capabilities
Controls and Operations	Intelligent Power Capping (iPowerCap)	The technology throttle the power of all devices with power capping capability to the lowest level at the Data Center or room or POD or Rack or device
	Power Policy	Power control function at both group and device level.
	Strategic Power Control	Power control can be tailored to business functions.
Energy Analysis	Datacenter Efficiency Analysis	Real time Power Utilization (PUE) and Data Center Infrastructure Efficiency analysis (DCIE); Provides data for other metrics i.e. ITEU, ITEE, CFI etc.
	Cooling Analysis	Analyses the temperature data, evaluates the cooling status, and provides cooling optimization suggestions
	Power Profiling and IT Equipment Characteristics	Analyses the power data to derive the power characteristic per equipment models
	Resource Bends Identification	Analyses the power data to identify servers with little or no utilization; This information is most valuable for datacenter consolidation and virtualization

Availability, Support and Requirements	<p>Available as a 1U Server appliance (Available in an optional rugged server format.) Available as a Virtual Infrastructure stack appliance (OVF or VMDK format)</p> <p>Supports Node Manager – Intelligent Platform Management Interface (IPMI); iDRAC = Integrated Dell Remote Access Controller iLO = Integrated Lights-out ; IMM = Integrated Management Module ; CMC = chassis management controller OA = Onboard Administrator ; SNMP = Simple Network Management Protocol ; CLI = command line interface ; SSH = Secure Shell ; WS-MAN = Web Services-Management ; BACnet/IP = Building Automation and Control Network; DCMI = Data Center Manageability Interface</p>
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DCIMRover Supported Devices

	Node manager enabled servers	Dell Power Edge Rack / Blade 12G	Dell Power Edge Rack / Blade 11G	HP Rack / Blade Server	HP Blade System Enclosure	HP SL Scalable System Enclosure	IBM Rack Server (X series)	IBM Blade Server / Enclosure	Cisco UCS / Rack Blade Server	Legacy Server with IPMI Support	Legacy Servers w/o Native Power	Cisco Energy	Facility Device (UPS, PDU)
Power monitor	Yes	Yes	Yes	Yes (1)	Yes, instantaneous	Yes, instantaneous	Yes, instantaneous	Yes	Yes	Yes, instantaneous	Yes, instantaneous	Yes, instantaneous	Yes, instantaneous for PDU only, real-time data for UPS
Power control	Yes	Yes (2)	Yes (rack server only)	Yes (3)	Yes	Yes	No	Yes	Yes	No	No	No	No
Thermal Monitor	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	No	No	No
Protocol	IPMI	iDRAC	iDRAC	DCMI (iLO)	CLI (OA)	CLI (SLAPM)	IPMI (IMM)	CLI (AMM)	DCMI/ XML API	IPMI	N/A	SNMP	SNMP
Availability	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

System Requirements

Component	Requirements	
Operating System for DCIMRover OS	Microsoft Windows Server 2008 R2 X86 Edition Microsoft Windows Server 2008 R2 X64 Edition Microsoft Windows Server 2012 R2 X86 Edition Microsoft Windows Server 2012 R2 X86 Edition	Dual Core Processor 8 GB RAM 80 GB HDD
DCIM Server	Oracle Java Run Time environment Apache-Tomcat application Server JAX-WS web service engine PostgreSQL 8.3 DB	

DCIMROVER™ Physical Appliance

DCIM ROVER Appliance i320 or i360X



Quick Spec	Features
Hardware	Intel® Xeon® E3-1 220v2 (3.1GHz/4-core/8MB/69W)
	Intel® Xeon® E3-1 220v2 (3.1GHz/4-core/8MB/69W) 8 to 32 GB Memory
	Up to 4 DIMM slots available for higher Memory capacity 4 bay LFF Hot plug or Non hot plug Drive Cages 1 PCIe 2.0 expansion slot 1 PCIe 3.0 I/O slot for additional communications and storage expansion (depends on processor) Redundant Power Supply Optical Drive Bay
	DIMM Slots Available 4 DIMMs (2 Channels/ 2 DIMMs per channel) Maximum Capacity 32GB (4 x 8GB@1600MHz) HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Un-buffered CAS-9 Low
	HP 1TB 6G SATA 7.2K rpm
	Operating System and Embedded Software
Oracle* Java Runtime Environment* 6 or above	
Apache* Tomcat* application server	
JAX-WS web service engine	
PostgreSQL 8.3 Database	



iG2 Group Inc. is a Data Center Science Company which provides solutions that can help organizations automatically optimize their Data Center capacity, from assets to energy. iG2 technologies connects Data Center Facilities, IT and the Cloud to transform them into a workload-aware Data Center that is flexible and efficient.