Dell OpenManage Power Center
Keeps Data Center Power Consumption Plugged In and Under Control

EXECUTIVE SUMMARY: Dell OpenManage Power Center and iDRAC7 Enterprise deliver a new level of control and effectiveness to power management. Using these solutions, the data center can finally resolve challenges such as overuse and mismanagement of server power, brownouts, loss of cooling, and managing highly dense racks. After all, companies could save $18.6 billion in electricity dollars by shutting down technology or reducing power consumption when servers, PCs, and notebooks are not being used, according to Pike Research. Dell's iDRAC7 Enterprise, OpenManage Power Center, and Intel's Intelligent Power Node Manager work together to resolve the problem of delivering accurate, timely, and reliable information on power-use. They make it easy for IT professionals to identify the areas where they gain efficiencies and cut wasteful costs.

Once viewed as energy-draining, heat-producing facilities, data centers are now leveraging technology to manage, monitor, and reduce power-consumption, thereby slashing electric and cooling costs, and diminishing their carbon footprints and damage to the environment. Every watt used has a dollar sign attached to it—and this next-generation of servers and power-management applications is designed to keep those dollars working for you, not flowing into the utility company's account.

However, organizations don't want to hobble the powerful servers that reside in their data centers. Companies must control energy expenses and eliminate unnecessary power-usage, while simultaneously providing systems with all the electricity they need to operate at-capacity.

Without taking such steps, the costs add up. By this year, data center power consumption was expected to cost $7.4 billion, compared with $4.5 billion in 2006, according to a report by the United States Environmental Protection Agency[1]. That was spent on 100 billion kilowatt-hours in 2011, vs. 61 billion kWh in 2006, the EPA estimated. Yet most organizations do not track this invisible asset: Only 45 percent measure their power usage and a mere 15 percent have power efficiency metrics such as power usage effectiveness (PUE) in place, according to the EPA[2].

The economy, organizations' desire to do more with less, and ongoing corporate cost-cutting initiatives, however, are generating interest in implementing programs and solutions that prevent waste. Companies could save $18.6 billion in electricity dollars or 191 billion kWh of electricity by shutting-down technology or reducing power consumption when servers, PCs, and notebooks are not being used, Pike Research said[3].

By partnering with technology vendors such as Dell®, the EPA has made a step at cutting energy-consumption in the data center through its popular ENERGY STAR program. Going further, some businesses have redesigned their data centers, separating cold and hot machines, right-sizing their servers based on task, and optimizing air flow, for example.

And organizations are looking to do even more. To cut electricity costs, they must reduce—or eliminate—wasted

1   http://www.energystar.gov/ia/partners/prod_development/downloads/EPA_Datacenter_Report_Congress_Final1.pdf
2   http://www.nemertes.com/impact_analyses/epa_energy_star_rating_underscores_data_center_power_challenges
3   http://www.pikeresearch.com/research/pc-and-server-power-management-software

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With Dell OpenManage Power Center, organizations can quickly see an overview of their data center's power-consumption. Here, the software indicates there is a data center cooling outage and power to all servers must immediately be reduced. The next polling cycle confirms that power has been reduced and when the cooling system is back up, normal power consumption will resume. *Source: Dell*

power, and cut-back on cooling expenses. They also want additional flexibility so they can more easily adapt the data center to their organization's evolving needs. Rather than view the data center on a piecemeal basis, IT professionals require a holistic vision that then enables them to drill-down deeper, as needed. All-too-frequently, organizations are forced to pick either a holistic or an in-depth close-up of individual components. Typically, however, organizations want to switch between views and want the freedom to choose.

With the right tools and the right partner, they can. And that's where Dell and OpenManage Power Center™ come in.

Power Savings with OpenManage Power Center

Dell, which has focused extensively on successfully reducing its own internal power-consumption and carbon footprint[4], continues to lead enterprises out of the power-reduction quandary. The industry-leading developer of data-center solutions recently released OpenManage Power Center, a management console with an extensive array of capabilities. Dell offers many other tools in its OpenManage suite such as server deployment, monitoring, and updating. As part of that family iDRAC7 Enterprise and Power Center complement or realize synergies when used together.

The iDRAC7 Enterprise leverages Intel® Node Manager

technology for platform-level power reporting and capping of Intel chipsets. OpenManage Power Center then communicates with iDRAC7 in Dell's latest generation of servers to provide node, rack, row, or data center-level aggregation of power-management data, as well as execution of control policy. Dell's iDRAC7 Enterprise, OpenManage Power Center, and Intel Node Manager work together to resolve the problem of delivering accurate, timely, and reliable information on power-use. They make it easy for IT professionals to identify the areas where they gain efficiencies and cut wasteful costs.

For example, iDRAC7 Enterprise provides details about power usage and temperature at the server-level, delivering an extremely granular starting-point for building detailed metrics. Dell's solution rolls-up this data to a rack or row level via OpenManage Power Center, providing a more holistic view of the data center or some key sections or clusters identified within. OpenManage Power Center delivers a new level of detail and available historical information, allowing IT managers to confidently make improvements in power-consumption efficiency while minimizing risks of impacting service levels.

Addressing Temporary Service Interruptions

One risk data centers can face is brownouts—temporary interruptions of service, in which power is reduced but not turned completely off. In some regions they are a semi-regular occurrence, when air conditioner use overwhelms utility companies' electrical grids. Rolling blackouts, where specific areas' electricity is turned off for a prescribed period, are impacting more cities, and companies must determine how they will address both circumstances. Downed utility poles, construction-related outages, and other problems can occur year-round.

No matter the source of the power emergency, OpenManage Power Center keeps tempers—and temperatures—cool.

Using Dell's OpenManage Power Center, IT professionals immediately invoke an Emergency Power Reduction policy. This lowers power-consumption at all IT-defined servers, lowering power-usage and reducing heat-output. IT departments can maintain the power-reduction as long as necessary to gain the continued uptime for as long as the cooling emergency continues. Without this solution in-place, the common practice is to begin a shutdown across all or part of the data center. This disrupts work and may impact service level agreements that bind the IT department to a percentage of guaranteed up-time.

Once cooling returns—power is back on or the air-conditioning system is fixed—simply end the Emergency Power Reduction

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4 http://www.datacenterdynamics.com/focus/archive/2011/09/dell-reports-31x-improvement-in-server-energy-efficiency-over-five-years2

policy, and the data center resumes normal operations.

The gains in productivity, the ability to meet SLAs, and protecting the hardware within the data center are obvious benefits to using OpenManage Power Center. Peace-of-mind, however, may be difficult to quantify.

For Maximum Capacity

Rack density is growing rapidly, whether it's due to the physical consolidation that results from virtualization and the cloud, or better data center planning and design. As a result companies may face power and thermal challenges.

With Dell OpenManage Power Center, IT professionals can develop a known power cap for the rack. At this level, the rack does not experience any heat or power problems. IT managers can then continue adding servers, and monitor the rack to ensure energy consumption remains below the approved power cap.

As a result of the Intel-based Dell solution, Sunnybrook saved 267,158 kWh annually for financial savings of $26,716 Canadian yearly.

One of the features of rack-level power capping that OpenManage Power Center provides is a dynamic policy that allocates power to servers based on priority while remaining within the overall power cap. If a rack begins to reach its maximum level of power-consumption, lower priority servers will be capped to allow the higher priority servers to maintain their service levels while keeping the rack as a whole within its budget. With OpenManage Power Center, servers can be designated high, medium, or low priority.

A Force for Savings

The savings can really add up as organizations take control of power and heat.

Canadian healthcare provider Sunnybrook Health Sciences Centre was managing extremely dense racks following its adoption of virtualization[5]. The hospital's 20-year-old data center was bursting at the seams with older equipment until it virtualized on Dell PowerEdge™ R710 servers powered by the Intel Xeon® processor X5570. The organization is now adopting the six-core Intel Xeon processor X5670.

As a result of the Intel-based Dell solution, Sunnybrook saved

Dell PowerEdge servers include Dell Energy Smart Design enhancements such as power-supply units (PSU) that are right-sized for system requirements; enhanced system-level design efficiency; policy-driven power and thermal management, and highly efficient, standards-based Energy Smart components. *Photo Credit: Dell*

267,158 kWh annually for financial savings of $26,716 Canadian yearly. The hospital also won a one-time prize of more than $33,000 Canadian from the local utility, because of its energy savings. In four years, Sunnybrook will have saved more than $100,000 in electrical costs alone—a healthy boost to the medical-practitioner's bottom line, one that will enable the provider to spend more on patients and less at its local utility company.

Power Couple

Dell is a long-time proponent for lowering organizations' energy costs. Dell PowerEdge servers, for example, include Dell Energy Smart Design enhancements such as power-supply units (PSU) that are right-sized for system requirements; enhanced system-level design efficiency; policy-driven power and thermal management, and highly efficient, standards-based Energy Smart components.

Add-in Dell's world-class services, available for assistance in everything ranging from design to consulting, implementation to support, and organizations can dramatically curtail their power and cooling spending—without disruption of service or quality.

With the combination of Dell OpenManage Power Center, iDRAC7 Enterprise, and Intel Node Manager, organizations can take control of their power and cooling costs, pull the plug on expensive monthly utility bills and start investing those dollars back into their own businesses. With its family of power-management and measurement solutions, Dell keeps data centers—and executives—humming.

For more information, please visit: www.dell.com/PowerCenter

5   http://www.intel.com/content/www/us/en/data-center-efficiency/data-center-efficiency-xeon-5600-sunnybrook-health-study.html?wapkw=sunnybrook