(intel®)

Improving Data Center Management and Monitoring

Intel® DCM delivers real-time power, thermal and utilization analysis, and reduces costs by improving capacity planning and avoiding extra hardware

CROWDSTRIKE

Business:

CrowdStrike™ is a leading global provider of next-generation Software-as-a-Service (SaaS) endpoint protection, threat intelligence, and pre-and-post incident response services.

Challenges

- Monitoring server power and thermals in real-time
- Identifying underutilized servers
- Optimizing rack capacity and setting power policies
- Identifying thermal hotspots
- Ensuring server firmware consistency

Solution

- Intel® Data Center Manager

Executive Summary

CrowdStrike deployed Intel® Data Center Manager (Intel® DCM) to monitor over 4,000 devices across three data center facilities in California and Nevada. The solution provides IT administrators accurate, real-time power and thermal consumption data to deliver needed insights to manage power and address hotspots throughout the facility. This includes monitoring inlet temperatures of servers and aggregating that data to racks and groups of servers across the company's three data centers. Additionally, Intel® DCM allowed administrators to safely raise the temperatures of some rooms, therefore increasing the Power Usage Effectiveness (PUE) while continuously monitoring devices for thermal issues. In addition to servers, CrowdStrike also deploys a number of backup storage devices, network equipment, and smart Power Distribution Units (PDUs) throughout its data centers.

Background

CrowdStrike provides compute and storage needs for across the first true SaaS based platform for next-generation endpoint protection. The highly-scalable platform supports a cloud-delivered next-generation endpoint protection service, delivering antivirus, endpoint detection and response (EDR) via a single lightweight server. The CrowdStrike Falcon™ platform is industry-leading and leverages cloud native architecture supported by sophisticated signatureless artificial intelligence/machine learning and Indicators of Attack (IOA) based threat prevention to stop known and unknown threats in real time. These innovative technologies require highly scalable and densely designed infrastructure for support.
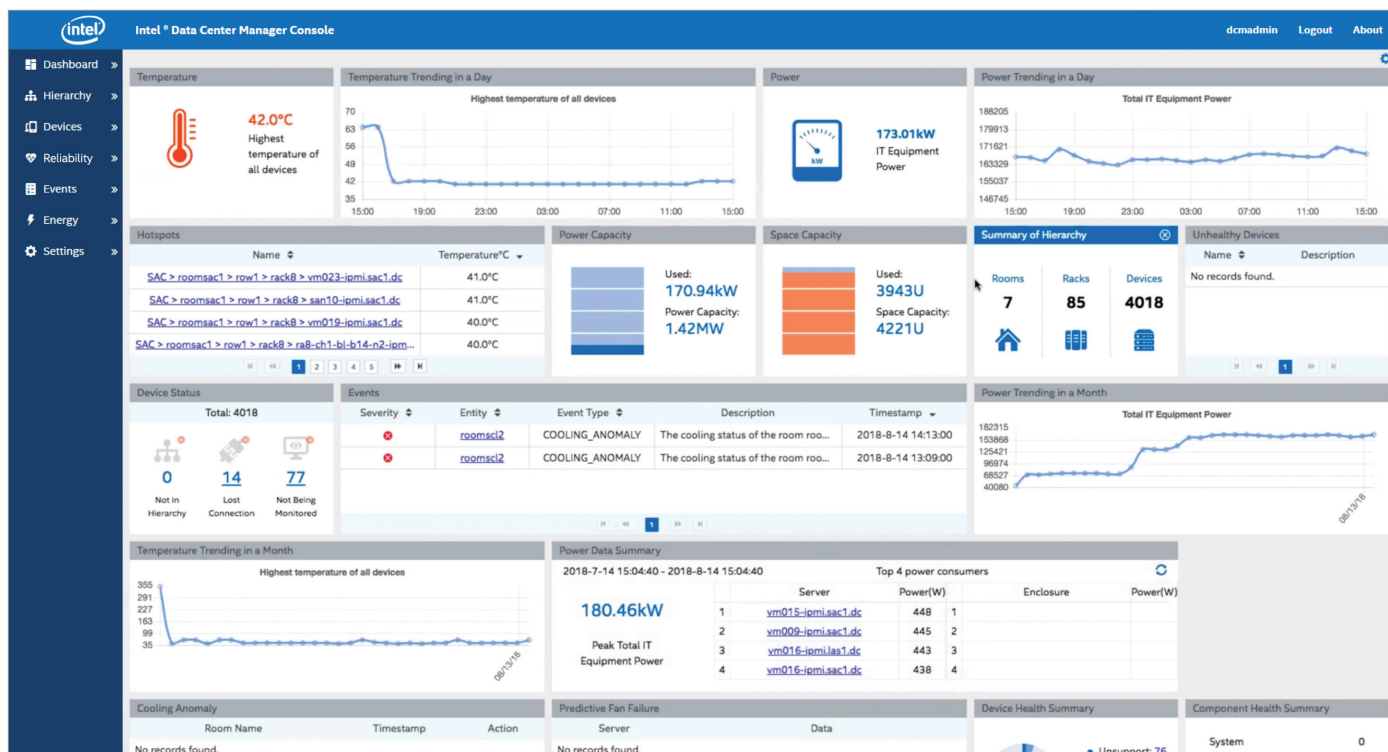
Figure 1. Intel® Data Center Manager Console

Processing a Trillion Data Points Each Week in Real Time

CrowdStrike clients span five verticals: financial services, the public sector, retail, healthcare, and energy. Named as a leader in the Q1/2019 "Forrester Wave Report," the company achieved the highest possible score in six criteria: Incident Response and Post Incident Reporting and Support (Current Offerings); Incident Preparation Vision, IR Retainer Vision, and Talent Management (Strategy); and Hours Performing Incident Prep (Market Presence). Falcon CrowdStrike's patented lightweight endpoint sensor can be deployed to over 100,000 endpoints providing visibility into billions of events in real time. The cybersecurity leader relies on a high degree of scalability to support the rapid changes massive data sets require and to optimize services.

CrowdStrike Threat Graph™ analyzes and correlates over 1 trillion events per week from millions of sensors deployed across 176 countries. The company provides a complete cloud-native framework stopping breaches with the combined power of big data, artificial intelligence (AI) and real-time visibility. CrowdStrike's unique approach identifies active indicators of attack (IOAs) to detect and curtail adversary activity before a breach.

Installing Intel® DCM

CrowdStrike installed Intel® DCM to gain greater insight into the thermal efficiency, utilization, and health of its data centers. Intel® DCM does not require the installation of any software agents on managed nodes, and therefore does not impact performance. CrowdStrike's IT team was impressed by the ease of use and quickly began to compile and aggregate data from its collection of servers. Intel® DCM enabled

CrowdStrike to aggregate and visualize trend data using its 2D front-of-rack visibility and overhead mapping features.

Providing Detailed Thermal Monitoring

The thermal design of traditional data centers can lead to hot spots. The lack of visibility into actual device power consumption may lead to over-provisioning and pushes energy usage well beyond the levels needed to maintain cooling margins.

Intel® DCM allows data center staff to efficiently identify cooling anomalies within individual data center rooms by using existing servers as wireless sensors, harnessing that ability to deliver device-level thermal data in real time, thus eliminating the need for additional temperature sensors, another significant source of cost savings.

Intel® DCM indicated that the front view of an aisle revealed cabinet hot spots, and that some of the servers were operating at temperatures that were higher than expected. This allowed staff to quickly root cause of the issue as being related to their racking or the rack configuration.

Reducing Cooling Costs by Increasing the Data Center Temperature Set-point

Energy costs are the fastest-rising expense for today's data centers counting for 25 percent of the total data center energy consumption. Operators often lower temperatures more than needed due to a lack of visibility into actual server temperatures and power consumption. This often leads to unnecessary energy costs.

Using Intel® DCM's cooling analysis, CrowdStrike also found that the set-point for one of the server rooms during the

initial deployment was 3°C too cool. This allowed them to reduce cooling costs by safely raising the temperature of the room, and therefore improving PUE and energy efficiency, while continuously monitoring hardware for temperature issues. Intel® DCM provided the necessary data to raise the overall set-point temperatures, and significantly lower annual cooling costs across the company's entire data center footprint. As a result, CrowdStrike was able to save 12 percent on their annual power bill.

Identifying Underutilized Servers

In large data centers, the lack of sufficient workload performance monitoring typically leads IT administrators to purchase more hardware. With Intel® DCM, data center operators are able to quickly detect and analyze underutilized systems by monitoring their CPU utilization and power consumption over time.

This feature in Intel® DCM allowed CrowdStrike to identify around 500 servers that were underutilized, and remotely shut down the systems that were not needed or End-of-Lifed.

Reducing Data Center Footprint and Costs by Increasing Rack Density

Efficient space and power capacity management is an essential part of operating data centers. This however becomes increasingly difficult when data centers grow in density, size, and complexity, and with no easy way to get granular power consumption details.

Intel® DCM offers a single solution for power management across all devices in the data center, supporting the multiple proprietary power measurement and control protocols required by different OEMs.

CrowdStrike was able to use Intel® DCM to create the needed power statistics for every rack and server model, with no additional hardware or software. They were therefore able to better plan and manage capacity and utilization in racks, increase their rack densities, and delay adding new racks.
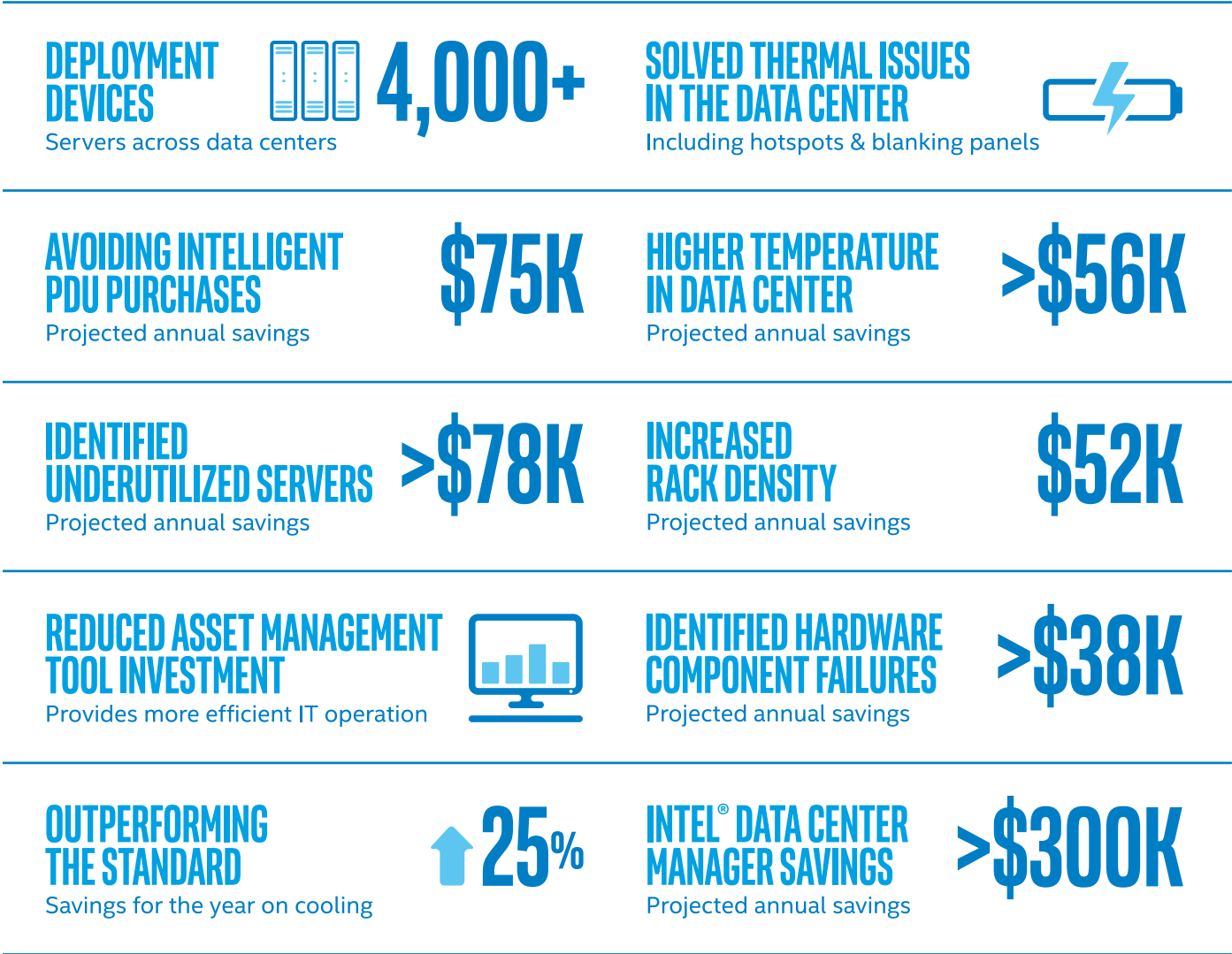

DEPLOYMENT DEVICES **4,000+**
Servers across data centers

SOLVED THERMAL ISSUES IN THE DATA CENTER
Including hotspots & blanking panels

AVOIDING INTELLIGENT PDU PURCHASES **$75K**
Projected annual savings

HIGHER TEMPERATURE IN DATA CENTER **>$56K**
Projected annual savings

IDENTIFIED UNDERUTILIZED SERVERS **>$78K**
Projected annual savings

INCREASED RACK DENSITY **$52K**
Projected annual savings

REDUCED ASSET MANAGEMENT TOOL INVESTMENT
Provides more efficient IT operation

IDENTIFIED HARDWARE COMPONENT FAILURES **>$38K**
Projected annual savings

OUTPERFORMING THE STANDARD **↑25%**
Savings for the year on cooling

INTEL® DATA CENTER MANAGER SAVINGS **>$300K**
Projected annual savings

Figure 2. Key Benefits of Intel® DCM

Avoiding the Cost of Additional Asset Management Solutions

Asset management solutions usually offer limited scope and cannot be easily integrated into existing systems.

Intel® DCM includes many asset management features such as organizing systems in physical or logical groups, easily searching for systems using their asset tags or other details, and importing and exporting a data center's inventory and hierarchy. These features, along with Intel® DCM's real-time power and thermal monitoring, and its middleware APIs that allow Intel® DCM to integrate easily with other solutions, helped CrowdStrike avoid investing in additional asset management tools.

Server Sub-component Health Monitoring

Intel® DCM's server health monitoring feature provided CrowdStrike with granular subcomponent failure analysis across 85 racks and 4,000 servers across multiple locations from a single view. Moreover, the health monitoring feature enabled CrowdStrike to receive alerts based on custom health, power and thermal events, which further improved uptime.

Identifying Server Firmware Version Inconsistencies

Data centers typically procure servers in batches at different times. Each batch may come with a different firmware version installed by default, even for servers of the same model. This may lead to security, reliability or performance differences between servers of the same model.

To maintain a consistent firmware version across each device model in the data centers, data center managers need to update the server manually which can take a significant amount of time, or use KVMs that can be very expensive.

Intel® DCM displays the firmware version of each server and can identify firmware version outliers. This helped CrowdStrike identify five different firmware versions on a specific server model. While 68 percent of the environment was running a new version, the solution discovered 32 percent were still running old firmware versions. This discovery prompted the CrowdStrike team to upgrade the remaining devices with the new version across all data centers, improving the efficiency of the entire network.

Improving Data Center SLA and Uptime by Identifying Hardware Component Failures

Service level agreements (SLA) are hard to implement when visibility into server health is limited. Intel® DCM allowed CrowdStrike to identify that the probability of a HW failure for a server was one percent. This insight along with the subcomponent health for each of its servers provides the ability to quickly diagnose the root cause of failures, reducing downtime durations to an average Mean-Time-to-Repair (MTTR) of two hours.

Intel® Data Center Manager Deployment Results

CrowdStrike was able to take advantage of Intel® DCM's capabilities and reduce the Total Cost of Ownership (TCO) of their data centers as follows:

- Based on the historical temperature readings of each server, CrowdStrike was able to raise the temperatures in their server rooms by 3°C, making possible a 25% overall savings for the year on cooling, amounting to $56,700 USD.

- Turning off 500 underutilized servers would result in an annual savings of around $78,500 USD. This does not include warranty or space savings.

- Creating power consumption statistics for every rack and server model helped CrowdStrike improve their capacity management, increase their rack densities, and delay the purchase of new racks. This led to an annual savings of approximately $52,000 USD.

- Server health monitoring allowed operators to gain deeper insights into hardware component failures, which in the case of CrowdStrike led to increased uptime, saving $38,400 USD in annual operation costs.

- By monitoring and managing the power consumption of each device, the purchase of additional PDU hardware became unnecessary, saving $75,000 USD.

Intel® DCM deployment results indicated that CrowdStrike's potential annual savings in deploying the solution across the company's 4,000+ servers would be around $300,600 USD.

Where to Get More Information

For more information on Intel® Data Center Manager, visit **intel.com/dcm** or contact **dcmsales@intel.com**

About Intel® Data Center Manager

Intel® Data Center Manager (Intel® DCM) provides accurate, real-time power, thermal and health monitoring and management for individual servers, group of servers, racks and IT equipment in the data center. It's a capability that is useful for both IT and facility administrators, which allows them to work jointly to increase data center efficiency and uptime.

PUE is an indicator defined by Green Grid, a global consortium working to improve power efficiency in the data center system. PUE is a metric for the efficiency of electricity use, defined as:

$$PUE = \frac{\text{Total power dissipation in a target facility}}{\text{Total power consumption for the IT equipment}}$$