Data Center Monitoring System Upgrade

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ABSTRACT

The project was developed at the Headquarters of the Defense Commissary Agency (DeCA). The Agency's data center was experiencing a high number of unscheduled service interruptions. After observing these incidents and the current data center environmental monitor system configuration, the project was able to identify several areas that needed to be improved. Changes in the incident response structure helped reduce response time. Data center layout reconfiguration helped maximize the current environmental monitor system. The project was successful in reducing unscheduled service interruptions by evaluating the current incident response process, changing the server layout configuration and optimizing the sensor placement within the data center.

INTRODUCTION

The project took place at an agency of the United States Department of Defense (DoD) that operates nearly 240 commissaries worldwide. military commissaries sell groceries and household goods to active-duty and retired members of all seven uniformed services of the United States. Several years ago, the DoD had the agency consolidate three data centers into the agency's headquarters. The different Information Technology (IT) Directorates were successful in consolidating multiple servers within the same facility but neglected to upgrade its environmental monitor system for the new demand. This project helped respond to a problem the data center was experiencing in where there had been several service interruptions caused by temperature in the data center reaching critical levels. There is a direct relation between a data center's environment and its performance. Upgrading the current environmental monitor system and processes was conducive to a well-managed data center. Since high temperatures, humidity and water are the greatest enemies of a data center the objective was to improve the data center's configuration and environmental monitor system.

ANALYSIS AND IMPROVEMENTS

To document the current state of the data center, environmental monitor system data was captured to demonstrate how adequate temperature reading improves with proper placement of sensors. The data gathered helped identify data center gaps of the old system. It was clear that sensor placement alone would not achieve the desired objectives and that a change in layout was needed. The project captured the old data center configuration and improved the configuration to maximize the environmental monitor system effectiveness.

Proper Placement of Sensors

The placement of additional Sousaphone WEB600 sensors in the data center was done as shown in Figure 1. These additional sensors were instrumental in demonstrating to stakeholders the need of having an adequate environmental monitor system.

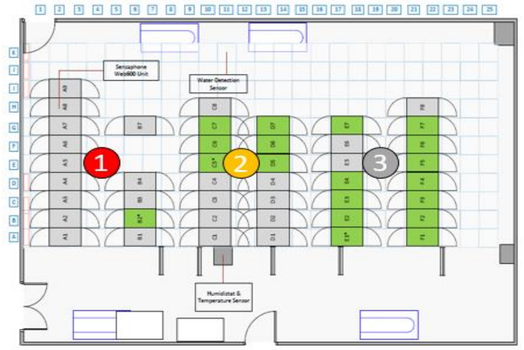

Figure 1
Placement of additional sensors

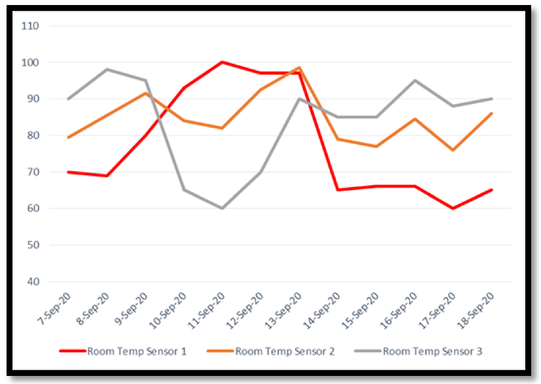

Figure 2
Temperature gap by rack sensor placement

Data Center Incident Response Process Flow

One of the major objectives of this project was to improve the incident response of server team technicians. Under the old process all incidents involving the environmental monitor system were routed to the Facilities and Engineering Department. Figure 3 shows the steps an incident generated by the environmental monitor system had to go before it reached the server team at the IT Department. Once the incident was recorded in a remedy ticket, the resolution and priority of the ticket was handled by the server team making it the IT Departments priority. To improve the process the incident reporting process was taken away from the Facilities Team and aligned under the server team as shown in Figure 4.

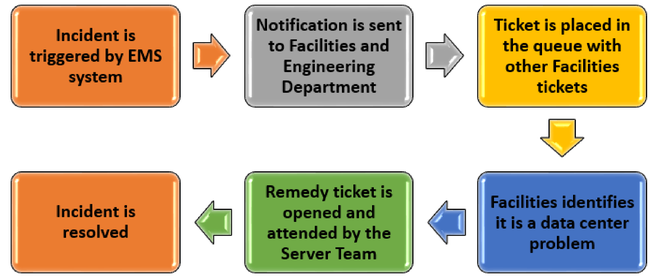

Figure 3
Old incident response process flow

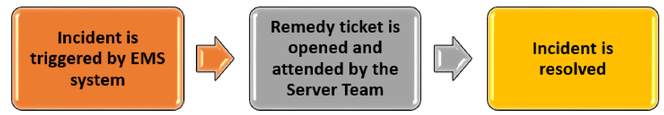

Figure 4
New incident response process flow

RESULTS

The adequate placement of sensors in a data center helped the server team document and justify a need for a more robust sensor configuration to optimize the performance of the data center moving forward. This improvement brought the data center font and center to top management. Management was presented with a risk of future service interruptions. Project presented that it is not possible to accurately monitor a data center of a room the size of 26 ft. x 80 ft with only three sensors. Similar data center rooms have an average of 250 sensors to monitor environment. One of the major accomplishments of the project was to realign data center incident reporting under the Server Team in charge of the data center. This change helped improve the process reducing the resolution time from one week to less than 24 hrs.

CONCLUSION

The organizations as a whole had a well-established maintenance program and a robust enterprise remedy system, but it did not have the capability to monitor the environment in the data center to provide the response needed to avoid unscheduled service interruptions. The project was successful in reducing unscheduled service interruptions by evaluating the current incident response process, changing the server layout configuration and optimizing the sensor placement within the data. Another key accomplishment of the project was to realign the incident response process to the correct department significantly reducing the technician's response and incident resolution time.