

The Economic Value of DCIM

- Shekhar Dasgupta, Founder, & Sourav Das, Sr. Consultant - DCIM
GreenField Software Private Limited

We all remember the close association of Business Process Reengineering (BPR) and ERP. The ERP had to deliver on a set of business outcomes defined from a BPR exercise, like improving Inventory Turns by 50%, or improving Order to Cash cycle by 20 days which would have direct impacts on profitability. Over a period of time, the economic value of a successful ERP implementation became well established.

As Data Centers are becoming increasingly capital intensive and operating costs of running them are mounting, we are seeing CIOs conducting Data Center audits. But what happens after the audit is completed? What tools are there to manage and measure progress in Data Center operations that can help to reduce costs and mitigate the risks of Data Center failures? This article looks at how CIOs can leverage an emerging technology - Data Center Infrastructure Management (DCIM) Software.

Much of recent discussions on the benefits of DCIM have been concentrated around the technical aspects of power and cooling management, asset management and capacity planning of a Data Center. While that is important, we also need to understand how that directly translates to economic value. In a similar way ERPs supported BPR, DCIM can lead to direct business outcomes. Here are two examples, which we will examine in further detail:

1. Cost Reduction: if a company is embarking on an organization-wide cost reduction program that also impacts the Data Center and they set targets to reduce the capital outlays and operating expenses by a certain percentage over the next three years, DCIM software can help identify potential savings through:

- Better asset utilization,
- Better Floor and rack space usage,
- Better power management.

2. Higher Availability: if the Data Center is incurring penalties in not meeting uptime requirements per their (internal or external) customers' SLAs, then DCIM software can help

- identify potential single point of failures across the entire chain from application to power source,
- prevent failures through better alert management,
- provide ability to simulate Move-Add-Change to detect any potential adverse impact and
- provide predictive analytics for failure prevention before they actually happen.

How can Data Center CapEx & OpEx be reduced?

Reducing Site Infrastructure CapEx: Building a data center is an extremely capital intensive project – can be as high as US\$ 1000 per square foot for a Tier 3 Data Center. Hence it is expected to have an extended life before it goes for an upgrade or expansion because of additional capacity requirements. Almost all data centers are either under-provisioned or over-provisioned in terms of floor space, power and cooling capacities. This is primarily because of the unavailability of real-time data on space, power and cooling requirements and the inability to simulate the exact need before the build project is kick-started. In the absence of an intelligent tool to project the actual capacity, consumption by devices is assumed or nameplate information is used during the planning phase. This either leads to an under-provisioned facility, requiring another costly upgrade within months or an over-provisioned facility with highly inflated specifications resulting in wasted capacity and capital expenditure.

Extending this point further, DCIM Software can extend the life of a data center by optimizing utilization of site infrastructure sub-systems like power, space and cooling. Using real-time data, historical records and ‘what-if’ scenarios, DCIM Software can accurately determine the required site infrastructure capacity, thereby preventing over-provisioning and saving wasteful capital expenditure.

Reducing IT CapEx: As per McKinsey, *the average daily server utilization, across data centers as a whole, generally tops out at a low of 6%, creating tremendous waste in terms of the capital employed and energy used.* Since most data centers do not have this visibility, new servers are constantly being procured even when there is huge amount of available but hidden compute capacity in the data center's existing server base.

DCIM can discover this hidden compute capacity in a data center through real-time monitoring of server CPU utilization and can identify candidates for virtualization, consolidation and re-purpose; thereby saving significant capital expenditure not only on server hardware but also on associated storage, networking and software licenses.

Reducing Energy Costs: In order to reduce energy costs for a data center, it is first necessary to baseline today's energy use by the data center facility and its various IT and site infrastructure components and then identify the possible avenues to optimize energy and reduce cost.

Most DCIM software measure power consumption of IT and facility equipment, calculates the Power Usage Effectiveness (PUE) and then recommends ways to improve the data center efficiency and reduce energy costs by defining ways to optimize power consumed by both IT and facility.

Reducing Other Operating Expenses: Data centers employ a sizable workforce for monitoring and maintenance. In addition to this, a significant portion of the OpEx budget is allotted for support and maintenance of old hardware.

DCIM increases the operational efficiency of the data center by automating critical processes like asset management, remote 'hands & eyes' support, capacity planning and provisioning and thereby minimizes human resource requirement and hence reduces operating costs.

DCIM also does an aging analysis of assets in the data center and identifies replacement candidates (devices that have reached end-of-life and can be replaced by more efficient alternative) thereby minimizing AMC costs.

Reducing Cost of Downtime: Today's Data centers are expected to maintain uptime in the range of 99.99%. In spite of building redundancies across the data center ecosystem, outages do occur, at an average of 2.5 times annually and the average outage duration is 134 minutes (*Source: Emerson Network Power*). If we consider the average cost of downtime to be \$300,000 per hour, then every enterprise incurs a revenue loss of approximately \$1,700,000 annually due to data center downtime and that too after making capital investment on high availability technologies.

DCIM complements specialized Business Continuity Planning (BCP) Software in multiple ways:

- Monitors every equipment in the data center, including the redundant components, at real-time and generates proactive alarms on any abnormal condition such as asset heart-beat, utilization, power consumption, environmental parameters and physical security threats. The alarms can be sent to designated staff to initiate proactive action and prevent a potential failure.
- Provides an alarm dashboard with a summary view of all alarm conditions in the data center and highlights those that need immediate attention.
- Maps critical relationships among data center assets, application and user groups and helps in doing impact analysis of an equipment failure.

A lot has been written about the indispensability of Data Center operations in running a business, and therefore the High Availability requirements that come with it. Unfortunately, this has led to massive over-provisioning and serious under-utilization of assets. No wonder, CFOs are concerned about the ever-increasing capital outlays, operating (including power-related) costs and then building new Data Centers as space runs out. Time has come to arrest this. DCIM, as planning and management software, can help CIOs and CFOs to achieve this.