

REPORT REPRINT

NTT Com puts DCIM at the core of its global software-defined datacenter future

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In what promises to be a significant DCIM deployment, NTT Communications is standardizing on a commercial platform across its global portfolio of more than 140 datacenters.

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NTT Communications has begun a global rollout of datacenter infrastructure management (DCIM) software to monitor, manage and automate its more than 140 datacenters. There are several scalable, feature-rich DCIM platforms on the market; NTT Com chose a platform that it will not publicly disclose, but says a differentiator was the supplier's willingness to implement more than 80 features that it requested.

THE 451 TAKE

We believe DCIM will play an enabling role as part of a software-defined operational and services strategy that NTT Communications envisions. By deploying DCIM, NTT Com will be able to tightly couple demand for the virtualized resources at the top layer of its digital stack (IT and networking) with the supply of underlying physical datacenter resources (power, cooling and space). Doing so will enable cost efficiencies and reduce the risk of service interruptions due to underprovisioning. By integrating data from DCIM with a range of other management systems, NTT Com will be able to make more informed decisions around best-execution venues, both internally and for its services customers, taking into account the cost and availability of IT, connectivity and datacenter resources. Ultimately, NTT Com hopes that its investment in DCIM will help it to more effectively plan for its datacenter capacity investments. Using DCIM to drive utilization of its existing facilities could also lead to NTT Com building fewer or smaller facilities.

EARLY ADOPTER SNAPSHOT

The DCIM platform is currently deployed in NTT Com's datacenters in Bangkok and Tokyo. Deployments in Europe and the US are underway, with India to follow. The company has an aggressive rollout schedule. It plans to deploy the software in at least 10 datacenters per calendar quarter, targeting its major facilities first.

NTT Com is adopting core monitoring and asset management features of DCIM for real-time data collection and visualization, as well as its trending and predictive analytics capabilities. Some automation features are being rolled out in select datacenters. NTT Com says the platform has enabled a significant reduction in operational workloads in some of its datacenters by identifying stranded capacity.

CONTEXT

Japan-based NTT Com is a global subsidiary of NTT Group, which also operates NTT East, NTT West, DoCoMo, NTT Data and Dimension Data. NTT Com's main business is network connectivity. It is one of the largest IP-backbone providers in the world, and has a considerable number of multi-tenant datacenter (MTDC) facilities and a sizeable hosting business. In recent years, it has invested heavily in becoming a cloud-computing provider.

As of mid-2017, NTT Com had a total of 143 datacenters comprising more than 394,000 square meters globally, including planned openings in the short term. It operates IT infrastructure services out of 15 of these facilities, including in Japan, China, Hong Kong, Singapore, the US, the UK, Germany, Paris and Madrid.

NTT Com has 11,900 employees in Japan and 9,650 elsewhere. For the fiscal year ended March 31, 2017, NTT Com reported a decline in overall revenue for the first time in four years, down by 2.7% to ¥1,283bn (\$11.68bn) year over year.

Its 241,000-strong parent NTT Group has 244 datacenters in total and a global tier one backbone network. Its target is to have 40% of revenue coming from global business in FY 2020 vs 27% in FY 2015.

STRATEGIC VISION

NTT Com hopes to standardize on the DCIM platform in all of its datacenters. In certain markets, some of its datacenters are branded as RagingWire, Gyron Internet or e-shelter – three wholly owned subsidiaries.

As of mid-2017, its portfolio of 143 datacenters included:

- Seventy-nine facilities in Japan.
- Ten in the US, including five RagingWire wholesale datacenters.
- Seven in the UK, including five Gyron interconnection, colocation and managed services datacenters.
- Seven in Germany, including six interconnection, wholesale and colocation e-shelter datacenters.
- Seven in India, all for Netmagic's cloud and managed services.
- Three in Hong Kong.
- Others in Australia, Austria, France, Indonesia, Malaysia, the Philippines, Taiwan, Thailand, Spain, Switzerland and Vietnam.

At least another seven datacenters are planned in China, Germany, India, the Philippines and the US.

DCIM is the foundation of NTT Com's 'next-generation datacenter' vision, enabling three core objectives: end-to-end visibility, integration of its building management features into DCIM and (ultimately) machine-learning datacenter automation.

DCIM DEPLOYMENT STRATEGY

The DCIM platform collects, normalizes and reports data about NTT Com's datacenter operating status, including power utilization, availability, redundancy and quality, in addition to environmental conditions such as temperature, humidity and airflow pressure. Data is pulled from a variety of sources within NTT Com's datacenters, including sensors, power meters and clamps, branch circuits, batteries and uninterruptible power supplies (UPSs), as well as equipment ranging from generators and chillers to power distribution units and cooling systems. By normalizing the data streams into standardized formats, the data can be readily analyzed and made available to end-user customers where applicable.

Customizable reports plot data over time, such as power consumption and operating environments at the room, row and rack levels. Configurable alerts notify NTT Com when preset thresholds are exceeded, and prioritize alerts that require an immediate response, such as a power-quality or supply issue or hot spots in the white space. These real-time alarming capabilities will help the company to proactively manage and mitigate risks by avoiding issues before they happen.

Enabling new efficiencies is also a key part of DCIM's value proposition. By identifying stranded capacity, such as power, cooling or space, NTT Com has been able to make changes to its datacenters' layouts in order to drive up utilization of key resources. DCIM will also provide NTT Com with insight to better manage and plan for its overall datacenter capacity.

In datacenters where the company serves (retail) colocation end users, including the wholesale facilities that it leases to retail colocation customers, NTT Com says it plans to offer end users a white-labeled version of its third-party DCIM software labeled as Nexcenter, its datacenter brand. NTT Com has not yet determined actual pricing of DCIM to end users of its datacenter colocation customers. Some features are likely to be free of cost, such as power and environmental monitoring, while for others it will charge a premium.

NEXT STEP: AUTOMATION

NTT Com's DCIM can act as a middle layer that not only handles protocol conversion from disparate equipment and data collection, but also supports distributed real-time (or near real-time) control capabilities.

The second phase of NTT Com's DCIM deployment is to use DCIM to control devices and systems, including some power systems and cooling units. The plan is for NTT Com to replace the traditional functionality of building management systems (BMSs) inside its datacenters with DCIM. BMSs are commonly baked into datacenters for environmental control at the design stage, and are typically the largest proprietary control system within a datacenter.

There are overlaps between BMS and DCIM, especially with monitoring. However, BMSs were not intended to measure or make sense of moving workloads or heat loads, or to link to operating information about the IT. By standardizing on DCIM and integrating with BMSs, NTT Com will streamline its monitoring (by eliminating duplicate functionality) while enabling far more granular monitoring, including tracking temperatures at a micro, local level and tracking IT power consumption.

NTT Com expects to be able to manage its key datacenter devices and systems in real-time via DCIM on a standard Web browser. Select information will also be available to staff on the datacenter floor via an HTML5 version of the DCIM platform for mobile devices.

The third phase of the DCIM deployment will be to exploit the software as the real-time control and automation framework for NTT Com's datacenters. At the heart of this effort will be deep analysis on a wide range of data from various sources (such as weather conditions, power costs and so on). Using historical data, the DCIM system will enable predictive forecasting and what-if scenario planning for IT moves, adds and changes.

Machine-learning algorithms are expected to enable cost-optimized operations. For example, NTT Com plans to use DCIM for machine-learning-driven automation of its datacenter cooling equipment – when conditions are optimal (as determined by DCIM and a combination of other data), the set-point temperature and fan speeds on cooling units will automatically adjust. In time, DCIM could enable NTT Com to operate its datacenters nearer to their design peaks – driving up utilization of its facilities and, ultimately, enabling substantial cost savings.

CHALLENGES AND OBSTACLES

As a BMS replacement, NTT Com's DCIM system still lacks some features. It is currently implementing both DCIM and BMS as proofs of concept in its existing datacenters.

NTT Com has a wide variety of sites with a range of existing BMS and monitoring tools. The challenges of integrating data into the DCIM platform will be different across these many facilities. While NTT Com has standardized operational procedures in some of its facilities already, it will need to ensure these procedures are common across all of its datacenters in order to exploit DCIM as a digitized enabler of these processes.

RESULTS

- Unified monitoring and interactive 3-D visualization of operations and customer environments.
- Opex savings from DCIM.
- A return on the DCIM investment within the first year (ROI is expected to increase significantly from 2018 onward).

COMPANY NAME

NTT Communications

ACTIVITIES

Datacenter network, cloud, wholesale and colocation datacenter services, managed hosting, ITC consulting

HEAD OFFICE

Tokyo

NUMBER OF EMPLOYEES

11,800

KEY SUPPLIERS

Undisclosed