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MANAGING SMALL SPACES

How Connectivity, the Cloud, Big Data and Mobility are Revolutionizing Distributed IT and Edge Management

Overview

An outage at a remote IT site not only affects the people and devices at the location it supports. It can create a chain reaction that ends with an IT manager spending valuable time trying to resolve the issue, often without the benefit of trained personnel on-site or even visibility into the exact equipment at the location.

When a service person finally arrives on site, they have little or no insight into the probable cause of the failure and so must first spend time diagnosing the problem. If the cause is component failure, they will need to secure parts and make a second visit to the site to resolve the issue. Meanwhile, the users or devices the site supports remain crippled by the absence of working IT.

Despite the increased connectivity we benefit from in other areas of our life, IT managers still largely lack remote visibility and management of their distributed equipment. The result is more downtime in remote locations, higher service costs and increased demand on internal IT resources.

Today, the technology exists to revolutionize the way distributed IT sites are managed and maintained. This paper outlines how connectivity, cloud computing, big data and mobile applications can work together to enable a new service paradigm for remote sites that increases visibility, reduces downtime and supports optimization of these vital IT resources.

The Changing Role of Distributed IT

Distributed IT, whether in retail locations, branch offices, university campuses or manufacturing plants, has been around for a long time; however, with almost every organization becoming more digitized, the number of these sites is increasing, and their role is changing. Whether called edge computing, fog computing, distributed IT or remote sites, they share the same challenges in regard to availability and service management.

Much has been written about the growth of the "edge" with the focus on moving content closer to users. According to **Cisco's most recent Visual Networking Index**, 35 percent of the content accessed by a North American Internet user is now sent from the same municipal area where the user is located thanks to the efforts of content providers to move content closer to users. Cisco projects that will increase to 51 percent by 2021 as companies such as Facebook, Amazon and Netflix continue to expand their delivery networks through partnerships with colocation companies.

However, in the enterprise, where distributed IT is more likely to be housed in a spare room or closet than a dedicated facility, data increasingly needs to move in the opposite direction: from the edge to the core. Distributed IT sites are being called upon to collect and communicate the data required to fuel the analytics used in everything from marketing to forecasting to predictive maintenance. In addition, with the growth of IoT, many distributed IT sites must be equipped with the storage and processing power required to support real-time decision-making by the people and machines they support. As they build upon their traditional role of supporting local users to becoming local data hubs and cloud gateways, distributed IT sites become more strategic and more critical.

Those changes are forcing enterprises to both deploy IT to new sites and, in some cases, reconfigure existing locations to better support emerging requirements. As they do, there is an opportunity to add technology that enables visibility, optimization and higher availability.

UNDERSTANDING THE EDGE

With nearly every industry pushing storage and computing closer to users and devices, there is a need for greater clarity in regard to edge computing applications and their technology requirements. To achieve that clarity, Vertiv analyzed the use cases that comprise the edge ecosystem to identify the similarities and differences between edge applications and their implications for the supporting infrastructure. As a result of this analysis, four leading edge archetypes emerged:

- **Data Intensive:** This archetype represents use cases where the amount of data makes it impractical to transfer over the network directly to the cloud, or from the cloud to the point-of-use, because of data volume, cost or bandwidth issues. Examples of the Data Intensive Archetype include high-definition content distribution and virtual reality; IoT applications that enable smart homes, buildings, cities and factories; and high-performance computing.
- **Human-Latency Sensitive:** The Human-Latency Sensitive Archetype covers applications where services are optimized for human consumption. Human-Latency Sensitive use cases include customer-experience optimization, natural language processing, smart retail and augmented reality.
- **Machine-to-Machine Latency Sensitive:** This archetype covers use cases where services are optimized for machine-to-machine consumption. These include the systems used for automated financial transactions, smart grid technology, smart security systems and real-time analytics.
- **Life Critical:** The Life Critical Archetype encompasses use cases that directly impact human health and safety. Examples of this archetype include digital healthcare, autonomous vehicles and drones, and autonomous robots.

These archetypes and the applications they encompass will have a profound impact on the evolution of critical infrastructure, particularly at the local level. They will drive the need for local computing hubs that further increase the need for efficient service management of distributed IT resources. For more information on these archetypes, see the Vertiv report, **Defining Four Edge Archetypes and their Technology Requirements**.

Building a Better Management Platform

Changing the way distributed IT sites are managed and maintained requires four core capabilities:

1. Local connectivity

First, the site must have the ability to consolidate and communicate operating data. Versatile small-space gateways provide secure, communication between distributed sites and a cloud platform. These gateways aggregate data from all of the equipment in a distributed location and communicate it to the cloud.

They represent an easy-to-deploy solution for getting a particular site connected, ensuring the security of that connection, and gaining the visibility required for remote management. Key capabilities enabled by the gateway include asset identification, remote real-time monitoring of critical infrastructure (UPS, batteries, PDUs, and thermal management equipment), software updates, and the ability to cycle servers or routers on and off through the UPS or PDU.

2. Secure central repository

A private cloud is required to centralize data from across multiple sites to provide a single view into distributed IT equipment to enable centralized asset identification and monitoring as well as to trigger notifications and updates that can be pushed out to remote personnel. Any data submitted by individuals must be segregated and held in private cloud to keep the data private and secure.

3. Knowledge base

The value of real-time data is amplified when it is analyzed in relation to historical data through analytics or machine learning to identify issues that could lead to failure or opportunities for optimization. The larger the historical data set available for this task, the more accurate the predictions. Because the knowledge base is comparing the real-time data from a piece of equipment to hundreds of thousands of operating hours of the same equipment in a similar application, it can identify patterns or trends that indicate future problems.

4. Role-based access

The challenge with many management platforms is that they never get used. The volume of data is too overwhelming and not specific to an individual's needs. Delivering notifications and data through a role-based mobile platform is essential to enabling a new service

paradigm for distributed IT sites. Each member of the team has the ability to monitor the whole environment or a specific location and only receives notifications relevant to their role in supporting those sites.

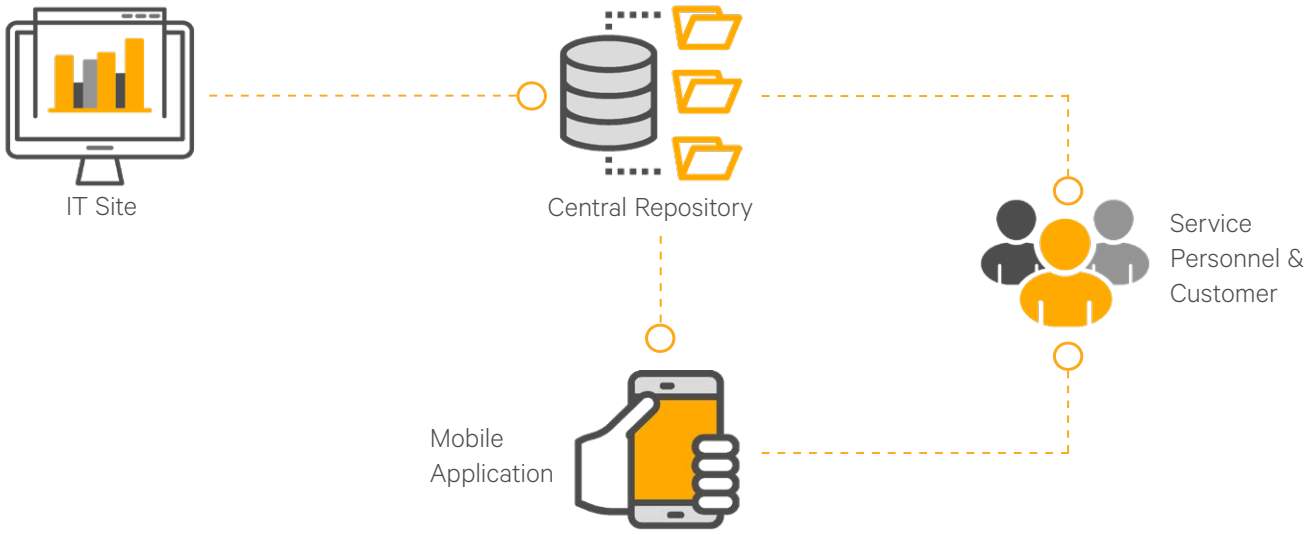
Using a mobile app, field service technicians also receive the information they need to act quickly and proactively. They can even coordinate their activities with on-site personnel before they arrive and provide visibility into their activities to others using the app. They arrive on-site with an action plan and the parts required to resolve the issue. In the near future, this service infrastructure also will enable the use of augmented reality to streamline service processes and provide even faster issue resolution.

Working together, these components enable:

- Asset identification, allowing managers and service technicians to know exactly what is installed at every location
- Remote real-time monitoring and management through a desktop-based cloud interface or through the mobile application
- A connected service experience that enables faster, more efficient issue response.
- Predictive maintenance that combines years of service data from the knowledge base with real-time data to accurately predict when distributed IT equipment is most likely to experience problems. This allows organizations to move from the break-fix model of maintenance to cost-effective, preemptive service.
- Performance optimization enabled by the ability to compare key site metrics with benchmarks from similar sites and identify operating practices that contribute to greater efficiency, utilization and availability.

With this service management infrastructure in place, IT organizations have the visibility and control to minimize downtime in remote sites and respond quickly to any issues without active involvement from IT management. The IT manager stays in the loop through the desktop interface or app, receiving notifications of services and related information, without being pulled away from their other tasks.

To learn more, contact your Vertiv representative or visit **VertivCo.com**.



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