CBRE Data Center Solutions

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THE FUTURE OF DATA CENTER OPERATIONS

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EXECUTIVE SUMMARY

Smart technology is everywhere, leaving no aspect of our lives behind. From smart homes and phones to smart laptops, televisions, thermostats, cars, wallets and even vacuum cleaners—these Internet of Things (IoT)-powered devices are designed to make everyday tasks easier and faster. Adoption of smart technology is accelerating. According to a recent report by International Data Corporation (IDC), by 2025, the average person will interact with a smart device nearly 4,800 times a day. This projection is roughly triple of where we stand today.

Smart devices require data. The more smart devices there are, the more data will be required to run them. Increasing amounts of data consumption means that data centers will need to keep pace to process, store, connect and analyze it all, which will increase the demand for data centers themselves, as well as the resources to run them.

Additionally, the increased adoption of IoT, cloud computing, digitization, and virtualization by major enterprises, has changed the distribution of infrastructure between enterprise, colocation and cloud.

So how does this impact data center operations?

In every way! Data center operators need to find more efficient and cost-effective ways to meet these changes and demands in order to remain viable.

Data center operations of the future will require looking at the data center facility as an integrated component of the technology stack and unlocking as much value as possible.

THE CASE FOR CONVERGED OPERATIONS

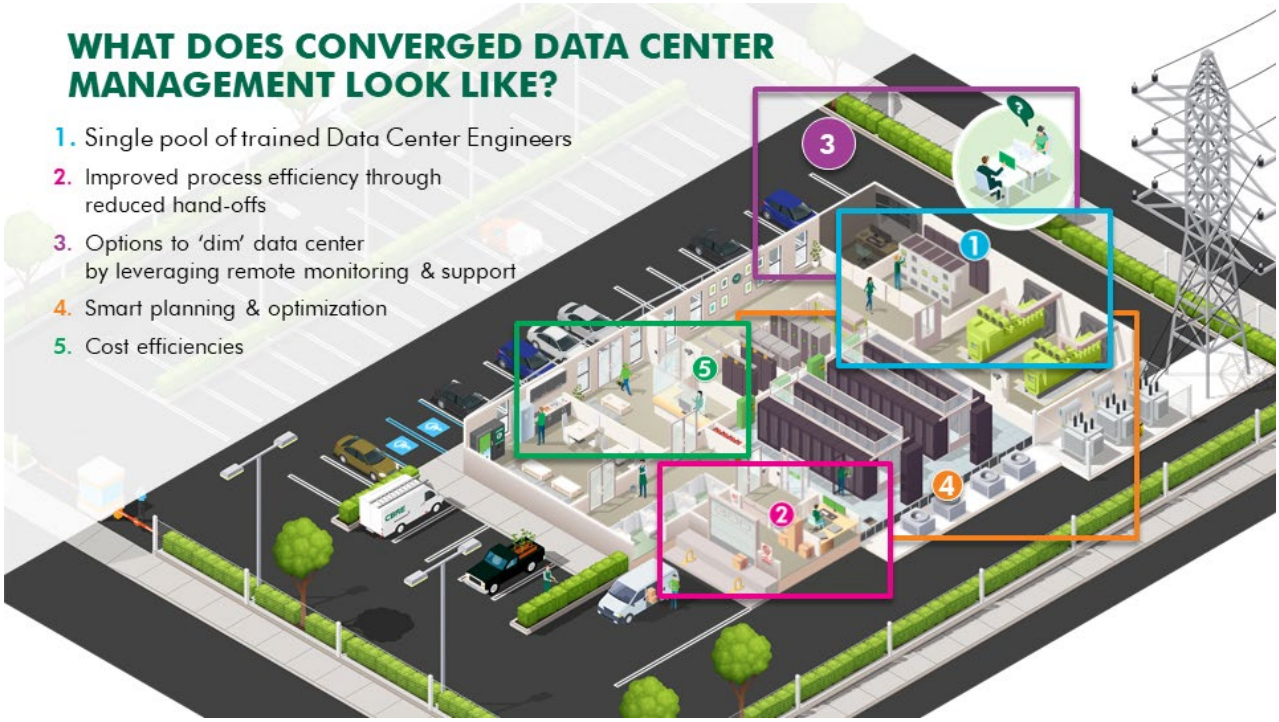
One way data center operators can realize cost savings and efficiencies is through converged data center operations.

Converged data center operations refers to the streamlined operation and management of facilities and IT functions through a single operational and financial model. This breaks away from many of the issues and inefficiencies evident in the historic model where these services are managed separately.

- The scope of work for data center facilities services generally includes electrical and mechanical maintenance, building management and control systems as well as energy optimization and capital projects.
- The scope of work for data center IT services may encompass technology hardware installation, migrations and break-fix, smart/remote hands, asset lifecycle management, migrations, white space fit-out, structured cabling and server imaging.

The financial benefits of converging the facilities and IT scopes of work for data center services are vast:

- Full visibility of end-to-end data center operations and costs, yielding a broader understanding of the full breadth of financial needs and options
- Better insights into organizational decision making, impacting both operating and capital budgets across facilities and IT
- Ability to convert capital to operating expenses and/or achieve cash deferral, including the ability to move a data center and its technology assets off balance sheet to more closely resemble a cloud financial model



The operations and efficiency benefits of converging the facilities and IT scopes of work for data center services include:

- Full understanding of the resilience of both the data center application and physical layer
- Supplier rationalization with fewer operational handoffs
- Maximum technician cost efficiencies via shared techs between M&E and IT
- Consistency and standardization

Taking advantage of the synergies possible from converging facilities with IT operations will positively impact the bottom line of any data center user or operator. At the most basic level, converging these services can yield significant efficiencies[1] while improving many other aspects such as better capacity planning, including the ability to unlock trapped capacity as well as achieving higher uptime due to a lower level of unplanned disruptions.

ADD TECHNOLOGY ADOPTION

The adoption of technology is another critical measure as operations teams are being asked to do more with less.

Key technologies and areas to watch are:

- Predictive modeling and intelligent analytics
- AL/ML control of data center subsystems and ultimately full BMS control
- Software defined power distribution to minimize trapped capacity
- Robotics – from drone based 'rounds and readings' to hardware swap-outs
- SDDC (Software Defined Data Center) – full automation of all data center assets, both FM and IT under a single data center 'OS' (Operating System)

The investment required to develop some of these technologies and deploy them broadly to gain the economies of scale will most likely be driven by the largest and most technology advanced portfolio operators.

Human error is still the largest cause of operational disruptions and while much can be done to significantly reduce this impact—such as having a competency-based structured training and certification program for technical staff in various data center disciplines as well as human factors—it is often not cost effective to train and maintain to an appropriate level within smaller businesses.

Technology and automation provide a significant opportunity to make step changes in terms of how data center operations evolve as we move forward in the next 3-5 years.

[1] CBRE clients have experienced up to 20% annual OPEX savings by switching to a Converged Operations model

THE EDGE: ACCELERATING DEMAND

It is our expectation that Edge data centers will be much smaller (in physical footprint and IT capacity) but there will be many more of them deployed across disperse geographies.

These sites will be un-manned or what some call 'dark sites' that can be deployed yet operated remotely. There is already plenty of technology available to remotely monitor and even manage many aspects of data centers today. However, anything that needs to be physically handled requires a distributed mobile workforce at least until such time as more advanced robotics are employed within at least the larger Edge sites.

We expect to see the development of more advanced robotic technology within Edge data centers in the 100kW to 750kW range in the next 3-5 years as Edge data center technologies progress.

With the real scale deployment phase estimated as being 2-3 years away, the unit cost of managing Edge will remain comparatively high compared to the other data center market subsectors.

IN CLOSING

In moving to the converged operations model, organizations should build a thoughtful business case focused on the enterprise objectves of reducing cost structure and increasing efficiencies, while meeting the demands of technology transformation.

Converged operations is a journey, which begins with a great advocate. For more information or help framing your organization's vision for converged, please do not hesitate to reach out.

ABOUT THE AUTHOR

Zahl Limbuwala is the Executive Director of Strategy at CBRE Data Center Solutions, where he has worked in data center technology, mechanical and electrical engineering, and client solution roles for over 20 years.

Most recently Zahl co-founded and led a data center software predictive modeling and analytics business that was acquired by CBRE in early 2019. Having provided services to more than 600 data centers globally, Zahl possess unique insights into how data centers operate across different market sectors and geographies.

Zahl is a widely respected thought leader and regular keynote speaker at industry events.

Professional Certifications & Accreditations

- Chartered IT Professional (CITP)
- Chartered Engineer (CEng)
- Patent Granted (US20100292976 A1) – Data Center Simulator
- Founding Chairman of the BCS Data Center Specialist Group
- Co-founder of Romonet
- Former consultant to the EU Code of Conduct for data centers

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CBRE DATA CENTER SOLUTIONS CONVERGED OPERATIONS CASE STUDY

THE CHALLENGE

CBRE Data Center Solutions was retained by a financial technology company to deliver facility management services to mission-critical sites across APAC. CBRE initially secured responsibility for maintaining and operating all mechanical and electrical equipment within client-owned data centers in Singapore and Hong Kong.

Due to the team's seamless transition with zero impact to business operations, CBRE was awarded additional scope including the provision of IT in Singapore, Hong Kong, Thailand and India. CBRE was challenged with providing both facilities and IT services via one team across two million square feet of mission-critical space in four countries and territories.

THE SOLUTION

With the expanded scope and geographies, the CBRE-client team came together to deliver a full-suite of converged data center operations, which includes FM and IT (ICT Smart Hands services). The unique converged operations model is comprised of data center technicians that are both FM and IT proficient.

This synergy delivers even greater value for the client:

Increased efficiencies. With critical facilities technicians cross-trained for technology roles and vice-versa, we optimize staff deployments during off-peak hours, resulting in substantial cost savings and less operational handoffs.

Reduced costs. CBRE technicians self-perform nearly 80% of all maintenance and troubleshooting activities. Specialist vendors are only engaged to resolve issues that require OEM diagnostics and customized tools to diagnose or resolve. Typically this translates into annual savings of more than 60% of specialist vendor reactive maintenance costs.

CBRE engineering expertise has directly translated into reduced OEM maintenance scope and frequency, delivering substantial cost savings compared to the traditional managing agent model. (e.g., CRAC unit maintenance reduced from monthly to semi-annual as CBRE engineers are able to self-perform the monthly scope.)

Supplier rationalization. With our expertise in network cabling and intimate knowledge of the client's equipment, global standards and operational requirements, we lead discussions on the client's behalf. We leverage our global supply chain of preferred suppliers and offer the client a choice of pre-qualified and competent vendors for their procurement needs.

Increased visibility into operations and costs. We provide insight into key spare parts along with utilization rates. With data center space at a premium, this ensures that the client is able to operate with minimal storage space. CBRE has also partnered with regional vendors to support the client with 'just-in-time' delivery options for critical spare parts that are held away from the client's premises.

ADDITIONAL DETAIL

As part of the transition, the CBRE team completed 'Project X' whereas we managed and executed the relocation of the key network equipment racks with 240 devices to a different colocation site ahead of the actual schedule. CBRE is also managing the migration to a colocation facility over the next 12 months.

Additionally, the team successfully took on responsibility for the following:

- Hardware implementation across various business units
- Hardware troubleshooting and replacements on servers and network switches
- Change task ticketing management; tickets monitoring and incidents handling as per the required SLA requirement
- Store/warehousing including record maintenance and updating
- Power maintenance
- Regular data center audits including SOC2 and ISO
- Projects spanning major tasks such as implementing technology machinery in data halls
- Data center relocations including data hall equipment migration

Today the team includes 23 full-time cross-trained employees and continues to deliver 100% uptime and the highest standards of quality and service.

For more information, please visit www.cbre.com/datacenters