

Dubai Municipality Drives CapEx Savings and Operational Simplicity

WITH LARGE SCALE DEPLOYMENT OF BIG CLOUD FABRIC AT LARGE SCALE

“Dubai Municipality selected Big Switch Networks for this project because the company offered the most innovative solution for our specific needs, and radically decreased our costs and offered network automation. Big Cloud Fabric provided us significant and ongoing advantages that we did not previously experience and would not have experienced with the other solutions we reviewed.”

MR. AHMED KAJOOR

HEAD OF IT INFRASTRUCTURE AT DUBAI MUNICIPALITY, DUBAI MUNICIPALITY

EXECUTIVE SUMMARY

Customer: Dubai Municipality

Industry: Government

Location: Dubai, India

Objective:

- Become completely operational on SDN technology
- Obtain enhanced visibility and automation of vSphere server deployments.
- Reduce costs

Solution:

- Core-and-Pod approach, comprised of three-rack pod design providing visibility and automation of vSphere
- The BCF controller integrated directly with vCenter to automate network application deployment on the physical SDN fabric.
- Edgecore Open Network Switches

Results:

- Increased network performance, speed and bandwidth, including 42X increase of switching speed and a 16x increase in backbone capacity.
- Reduced infrastructure size and enhanced performance resulting from core-and-pod approach.
- Combined three physical datacenters to a single logical cloud, reducing migration costs by 90%.

OBJECTIVE

Dubai Municipality employs 11,000 employees across 34 departments and six sectors, including International Affairs & Partnership, Environment Health and Safety, Public Health Services and Planning and Engineering. Dubai Municipality is focused on creating an excellent city that provides the essence of success and the comfort of sustainable living. Dubai Municipality is regarded as one of the largest governmental institutions in terms of services rendered and projects executed, thus the municipality is the leading driver of growth and evolution of the Emirate of Dubai.

Dubai Municipality is the first data center in the MENA region to become completely outfitted and operational via SDN Technology. Additionally, the datacenter is fully integrated and orchestrated with OpenStack and VMware. DM first began to modernize its datacenter approach when it became apparent that scaling with traditional tools would quickly become uneconomical. One of its first steps was to determine the true capacity of its networking. Additionally, the municipality wanted to eliminate core switch renewals, reduce migration costs and increase performance.

SOLUTION

Dubai Municipality chose Big Switch Network's Big Cloud Fabric to modernize its data center network. Dubai Municipality is the first data center in the MENA region to be completely outfitted and operational via open SDN technology coupled with Edgecore hardware. Additionally, the datacenter is fully integrated and orchestrated with OpenStack and VMware.

Dubai Municipality's deployment leverages a "core and pod" approach, and is comprised of a three-rack pod design, which provides enhanced visibility and automation with vSphere server virtualization deployments. The Big Cloud Fabric controller is a single pane of glass that integrates directly with vCenter to automate network application deployment on the physical SDN fabric. In essence, combining three distinct data centers into one cloud network.

Big Cloud Fabric then became the single point of integration with vCenter for an entire Leaf-Spine Clos fabric, helping eliminate bandwidth bottlenecks. Integration of Big Cloud Fabric with vCenter also enables VM visibility, including VM mobility events, directly through the Big Cloud Fabric controller GUI.

Additional Big Cloud Fabric enhancements for vSphere deployments include:

- Auto Host Detection & LAG Formation
- Auto L2 Network Creation & VM Learning
- Network Policy Migration for vMotion/DRS
- VM-level Visibility (VM name, vMotion)
- VM-to-VM Troubleshooting (Logical & Physical)

Unlike legacy box-by-box networking, Big Cloud Fabric is a Leaf-Spine Clos fabric with centralized SDN control that operates as one logical switch with a single pane of glass for network management instead of the traditional manual box by box management paradigm. The innovative BCF architecture provides order of magnitude improvements in ease of use and manageability of data center networks by offering the following transformative benefits:

- **Simple to Provision** – Enables rapid provisioning and segmentation of tenants—key for the physical network to operate at the speed of VMs. This includes network automation for both OpenStack and VMware components.
- **Simple to Operate** – Enhance productivity with a zero-touch fabric and single-point management that provides significant day to day operational efficiencies. Administrators configure, manage, debug/troubleshoot, and upgrade BCF using CLI, GUI, or REST API – familiar networking technologies. This centralized view enhances operational simplicity by providing a single dashboard as well as quick and easy access to troubleshooting, analytics and telemetry information.
- **Simple to Scale** – A logical chassis enables an elastic pod architecture that can grow from 2 racks to tens of racks seamlessly as required by business needs. Additionally, faster time to service enablement as well as rapid (hitless) network software upgrades enable rapid deployment of new features. For example, the BCF architecture has a single interface for calling the API, relieving the network from having to speak to each and every switch in the environment like traditional networking approaches.
- **Economical** – Reduces overall TCO by up to 50% compared to a legacy networking infrastructure. Specifically, the Dubai Municipality was able to eliminate core switch renewals, reduce migration costs, and downscale technology investments to exactly what was needed, which included moving from an ISP router to more economical entry-level hardware.

The team from Dubai Municipality who were responsible for this project, from proof of concept through deployment include: His Excellency Eng. Hussian Lootah, Director General at Dubai Municipality, Mr. Mohammad Al Zaffin, IT Director at Dubai Municipality, Mr. Ahmed Kajoor, Head of IT infrastructure at Dubai Municipality and Mr. Ahmad Al Emadi, Datacenter Project Manager at Dubai Municipality.

RESULTS

- With this new data center network, Dubai Municipality experienced the following advantages:
- Increased network performance, speed and bandwidth: Increased switching speed by 42x, increased backbone capacity by 16x
- Reduced overall infrastructure size
- Enhanced Performance by connecting everything to the Core (BCF Controller)
- Combined 3 Physical Datacenter to 1 Logical Cloud, reducing physical and logical migrations costs by 90%

Other benefits the Dubai Municipality was also able to achieve include: reduced migration complexities and costs with a network architecture that is based on Software Defined Policies. Reduced costs on required infrastructures by spanning all fabric traffic to Security related devices. True integration of Big Switch to vCenter, enabling faster deployment of services by orchestrating the network layer. And lastly, Dubai Municipality is ready to efficiently adapt to future cloud and open technologies to continue its mission of evolving the Emirate of Dubai.

EDGECORE NETWORKS, LEADERSHIP IN OPEN NETWORKING

Together with its technology and integration partners, Edgecore Networks delivers leading open networks solutions for cloud data center, telecommunications and enterprise customers.

- Edgecore is an Accton company, leveraging the network technology, development and manufacturing capabilities of Accton Technology, the leading network ODM.
- Edgecore supplies Facebook and other hyperscale cloud operators with open network switches that meet the most demanding performance, scale and reliability requirements.
- Edgecore is a leader in the OCP Networking Project, with a full set of open switches based on its OCP-accepted design contributions: a 10GbE TOR switch which was the first switch ever accepted by OCP, a cost-optimized 40GbE switch, and two 100GbE switches based on switch silicon from different vendors allowing network operators to increase capacity with infrastructures based on 25G and 100G.
- Edgecore has contributed to OCP new classes of open hardware platforms to extend open networking to additional use cases in the data center, and beyond to the service provider edge and the enterprise access network. Those platforms include the Open Modular Platform supporting up to 512-ports of 100GbE for data center spine and core network applications, high-buffer switches for data center interconnect and service provider edge applications, and the industry's first open WiFi Access Points and PoE access switches to bring open networking to enterprise access networks.
- Edgecore switches support the broadest set of commercial and open source software choices in the industry, providing customers with alternatives to meet their specific requirements.
- Edgecore leads the industry in working with partners and industry groups to validate and make open networks deployable, for example as a charter member of UNH-IOL Open Networking Test Services Consortium which validates interoperability among open network switches, NOS, cables, optics, and NICs.
- Edgecore's value added distributor, integrator, and reseller partners provide a full set of services and IT infrastructure to support the requirements of cloud service providers, big data companies, telecom operators, and enterprises.

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Headquarters

3965 Freedom Circle, Suite 300
Santa Clara, CA 95054

+1.650.322.6510 TEL

+1.800.653.0565 TOLL FREE

www.bigswitch.com

info@bigswitch.com