Application Note

ENABLING THE CLOUD FOR OIL & GAS OPERATIONS— EVERYWHERE

Research from Cisco demonstrates that while over a terabyte of data is generated on a single oil rig each day, less than 1% of this data is used used for gaining insights into improving operational efficiency.

In the oil and gas industry, new technology is a game changer. By leveraging the Industrial Internet of Things (IIoT) and artificial intelligence (AI) applications—together with centralised cloud and edge compute capabilities—businesses can drive operational efficiency like never before. According to BIS Research, global IoT in the oil and gas market is expected to reach $39.4 billion by 2023, at a compound annual growth rate (CAGR) of 24.17%.[1]

Cloud providers enable edge compute capabilities at remote facilities so oil and gas companies can unlock the potential of IIoT applications on offshore platforms. Research from Cisco demonstrates that while over a terabyte of data is generated on a single oil rig each day, less than 1% of this data is used for gaining insights into improving operational efficiency. Part of the challenge is that it can take up to 12 days for a day's worth of data to be transmitted from these remote locations to a centralised processing centre. This process can be optimised by taking computing power to the edge.[2]

Inferences gained at the edge can then be aggregated at a data centre—where companies can apply advanced analytics and machine learning algorithms. By ensuring continuous synchronisation between cloud and edge compute resources, oil and gas companies can access actionable insights to bring value in every area of their business—from exploration to production.

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1   "Global IoT in Oil and Gas Market: Focus on Solutions (Sensing, Communication, Cloud Computing, Data Management), Applications (Fleet & Asset Management, Pipeline Monitoring, Preventive Maintenance), Industry Stream- Analysis and Forecast (2018-2023)," BIS Research (2018)
2   Brad Bechtold, "Beyond the Barrel: How Data and Analytics will become the new currency in Oil and Gas," Cisco (2018) https://gblogs.cisco.com/ca/2018/06/07/beyond-the-barrel-how-data-and-analytics-will-become-the-new-currency-in-oil-and-gas

MAKING THE JOURNEY TOWARDS CLOUD TRANSFORMATION

Whether identifying extraction sites or monitoring oil rig and pipeline performance, the cloud and edge compute ecosystem creates a world of opportunities for process improvement. Yet, there are connectivity challenges to enabling a cloud-optimised ecosystem for globally dispersed oil and gas operations.
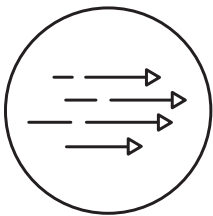
Meeting high bandwidth requirements for remote assets

Sensing and surveillance systems generate massive amounts of data—driving the need for high-throughput connectivity. Oil and gas companies need to ensure that remote assets—whether on land or at sea—are able to access fibre-like connectivity, even in the absence of terrestrial networks.
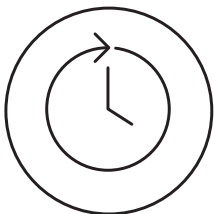
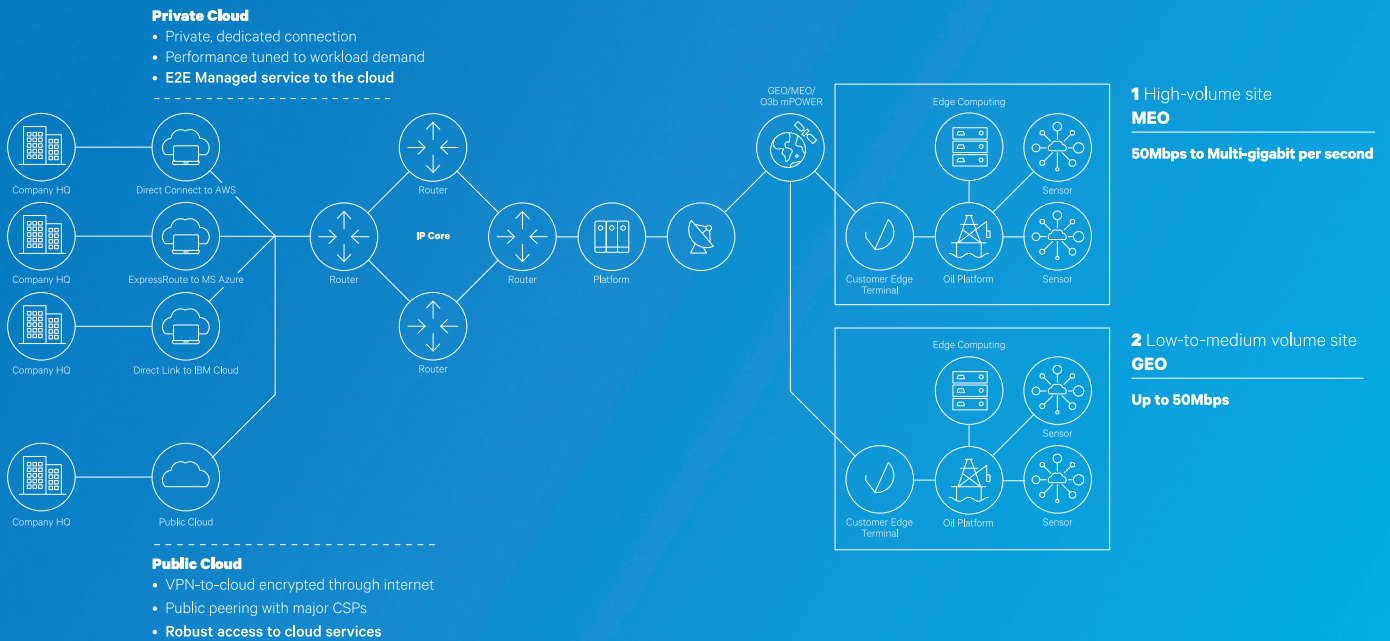### Minimising latency in time-critical operations

For exploration and production operations, teams are often required to work collaboratively—and take decisive action by sharing and analysing information in real-time. To ensure these real-time processes and workloads run smoothly, businesses need a low-latency solution connecting their remote assets.

Enabling data exchange between the edge and core—and vice versa

Remote facilities upload and receive large volumes of data on a daily basis. To ensure the centralised cloud, edge compute, and IIoT can work together to drive value, businesses need their network to adapt dynamically to high-bandwidth requirements on both forward and return links.

Our satellite fleet and global terrestrial network deliver the ideal combination of coverage, throughput, and low-latency performance, ensuring remote facilities everywhere are just one hop away from cloud data centres.

Private Cloud
- Private, dedicated connection
- Performance tuned to workload demand
- **E2E Managed service to the cloud**

Company HQ

Direct Connect to AWS

Company HQ

ExpressRoute to MS Azure

Company HQ

Direct Link to IBM Cloud

Company HQ

Public Cloud

Router

IP Core

Router

Router

Router

Platform

GEO/MEO/
O3b mPOWER

Edge Computing

Sensor

Customer Edge
Terminal

Oil Platform

Sensor

1 High-volume site
MEO

50Mbps to Multi-gigabit per second

Edge Computing

Sensor

Customer Edge
Terminal

Oil Platform

Sensor

2 Low-to-medium volume site
GEO

Up to 50Mbps

Public Cloud
- VPN-to-cloud encrypted through internet
- Public peering with major CSPs
- **Robust access to cloud services**

A multi-orbit fleet means more ways to connect to a multi-cloud world

TRANSFORMING THE CLOUD CONNECTIVITY STORY

As the only satellite-enabled network services provider with a commercially proven multi-orbit fleet, we are uniquely positioned to help oil and gas companies optimise cloud connectivity in remote and under-served areas. With the ability to deliver private, dedicated connectivity to the cloud over Medium Earth Orbit (MEO) or Geostationary Earth Orbit (GEO) links—or a combination of the two—we ensure that our customers can access technology in line with enterprise requirements.

We also enable customers to access multiple cloud solutions, including Microsoft Azure, Amazon Web Services, and IBM Global Cloud. Our satellite fleet and global terrestrial network deliver the ideal combination of coverage, throughput, and-low latency performance, ensuring remote facilities everywhere are just one hop away from cloud data centres. Leveraging our satellite-enabled network services allows oil and gas companies to resolve key connectivity challenges in their cloud transformation journey.

High-throughput connectivity—anywhere
We enable fibre-like connectivity to remote operations—whether an oil platform or a refinery in an under-served region—ensuring that the huge amounts of data generated by sensing and surveillance systems can be shared with cloud data centres from any location.
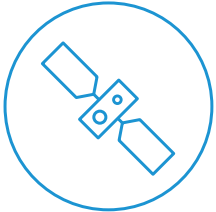
Consumption-based model
In the cloud era, oil and gas operations need varying levels of connectivity to support operations in different locations. A consumption-based model supported by our cloud connectivity solutions allows businesses to address bandwidth needs as they arise.

A low-latency solution
Adoption of latency-sensitive cloud applications and workloads is on the rise. Our MEO fleet delivers proven low-latency services, ensuring time-critical operations can be carried out efficiently.

Dynamic bandwidth allocation
As a communications system designed for cloud-scale services, O3b mPOWER supports dynamic allocation of cloud-scale bandwidth on both forward and return links, enabling large amounts of data to be transmitted from the edge to core data centres or the cloud—and back.

Intelligent resiliency
Leveraging software-defined wide area networking (SD-WAN), we can combine multiple satellite links to create a highly resilient, application-aware network service, providing our customers high availability for their most critical cloud workloads.

O3b mPOWER AND THE FUTURE OF CLOUD CONNECTIVITY

O3b mPOWER is the only satellite system designed from the ground up to deliver cloud services— with multi-gigabit scale, low-latency performance, and high availability

As the oil and gas industry deploys more IIoT and AI applications at the edge, its cloud connectivity needs will continue to evolve. Building on our market-proven MEO capabilities, the O3b mPOWER communications system will meet our customers' growing demand for cloud-scale connectivity—by delivering unprecedented system flexibility, performance, and scale.

O3b mPOWER is the only satellite system designed from the ground up to deliver cloud services—with multi-gigabit scale, low-latency performance, and high availability. It is the only non-geostationary satellite orbit (NGSO) solution based on commercially and operationally proven technology. For our customers in the oil and gas industry, this means eliminating business and operational risk, even while expanding their use of cloud and edge compute technologies in remote locations.

With thousands of beams per satellite, and an unrivalled ability to route traffic to any end-point, O3b mPOWER enables enterprises in the oil and gas industry to create dedicated, private connections from remote sites to the nearest cloud data centre. This means our customers can access reduced latency to maximise cloud application performance, and realise the productivity and operational agility benefits afforded by cloud and edge technologies.

O3b mPOWER, together with our current GEO and MEO fleets, ensures our oil and gas customers can leverage the cloud and edge computing to operate more intelligently and efficiently—now, and in the future.

To learn more about our cloud-optimised solutions., please visit www.ses.com/networks/cloud

Request a quote today

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