# Empower Your Edge

For Cloud

EdgeBook

Empower Your Edge: Cloud

While enterprise cloud adoption continues to grow rapidly, a number of significant obstacles remain for enterprise deployments including concerns about Security, Latency, Cost, Expertise and Performance.

A hybrid, multi-cloud strategy is the new reality for most enterprises, and an integrated localized offering that bundles solutions from best of breed providers that helps solve these cloud migration challenges.

EdgeConneX works with leading Cloud & IT service providers to bring their solutions to the Edge, deployed in close proximity to Enterprises so they can easily access secure, local connectivity to the Cloud for any and all of their workloads.

Welcome to the Cloud at the Edge.
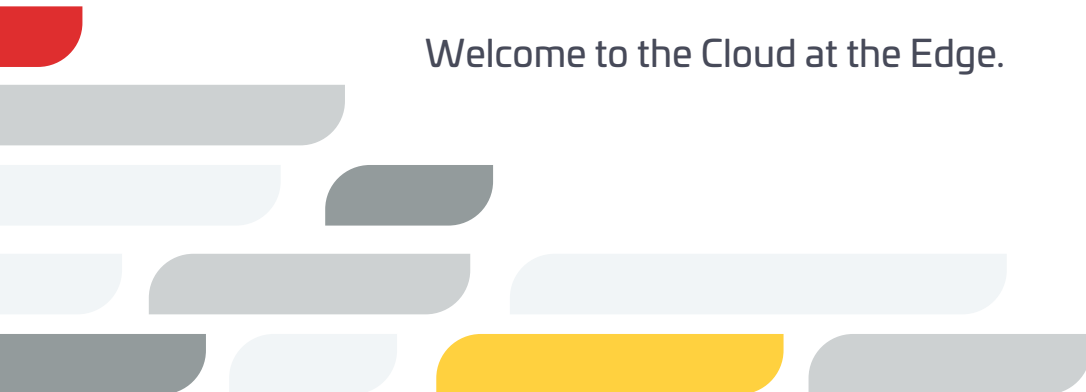
The Cloud is Now Mainstream

The cloud offers enterprises many advantages such as agility, scalability, resiliency, and automation. According to RightScale's 2019 State of the Cloud report, **94%** of enterprises surveyed are now deploying the cloud in their businesses. While the cloud is now mainstream for nearly every enterprise, nearly **70%** of companies utilized a hybrid cloud solution as their preferred means of cloud consumption.

94% of Respondents Using Cloud

69% Hybrid

3% Private Cloud Only

Public Cloud Only 28%

Public = 91%
Private = 72%
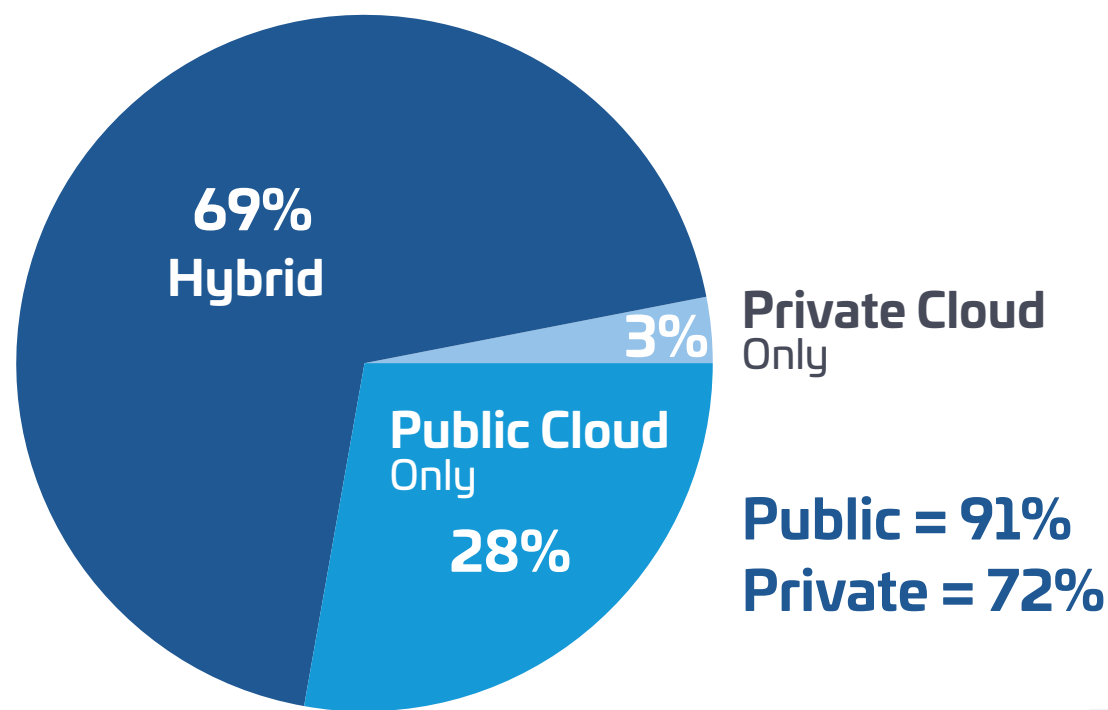
"...we don't think of hybrid as a stopgap as a move to the Cloud. We think about it as the coming together or distributed computing, where the Cloud and the Edge work together, not just for old workloads, but most importantly for new workloads."
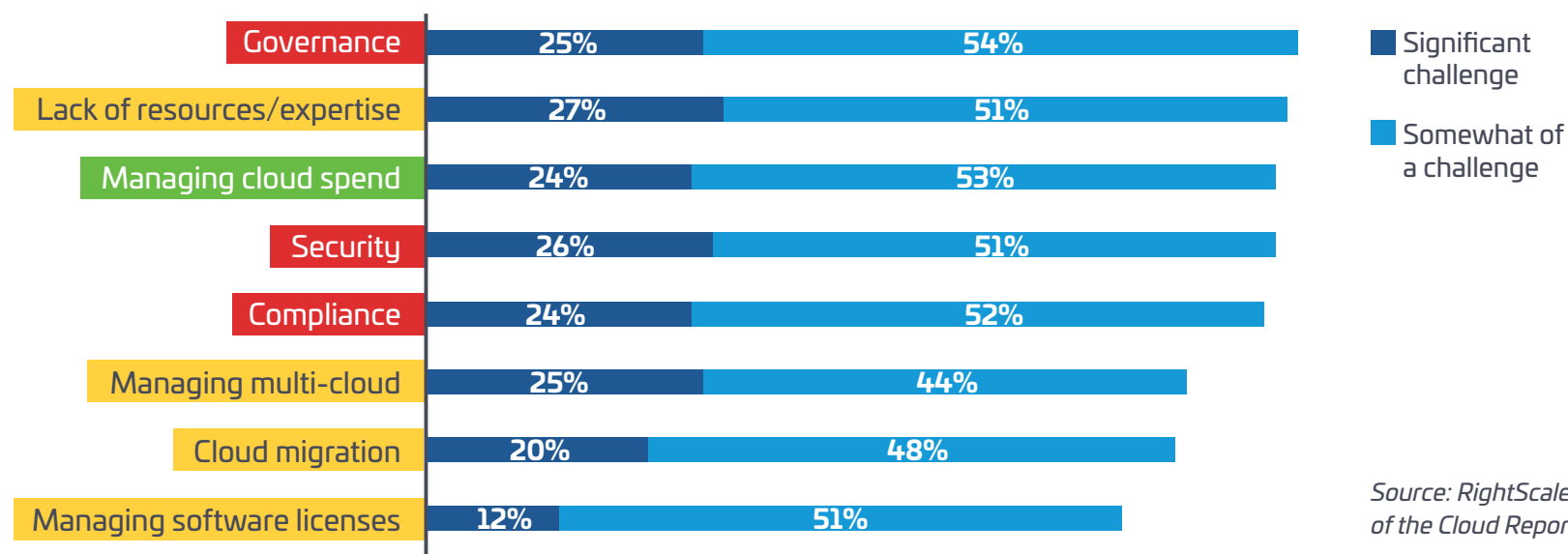
~ Satya Nadella, CEO Microsoft

Source: RightScale 2019 State of the Cloud Report from Flexera

Challenges to Enterprise Cloud Adoption Remain

While enterprise cloud adoption continues on an upward trend, a number of inhibitors still remain for a full and complete adoption as noted in the 2019 State of the Cloud survey responses below. EdgeConneX, along with its solution and technology partners, is helping to solve for many of these cloud adoption impediments by bringing the cloud to the Edge with an integrated cloud solution offering.

Cloud Challenges

% of All Respondents

Challenge	Significant challenge	Somewhat of a challenge
Governance	25%	54%
Lack of resources/expertise	27%	51%
Managing cloud spend	24%	53%
Security	26%	51%
Compliance	24%	52%
Managing multi-cloud	25%	44%
Cloud migration	20%	48%
Managing software licenses	12%	51%

■ Significant challenge
■ Somewhat of a challenge

Source: RightScale 2019 State of the Cloud Report from Flexera
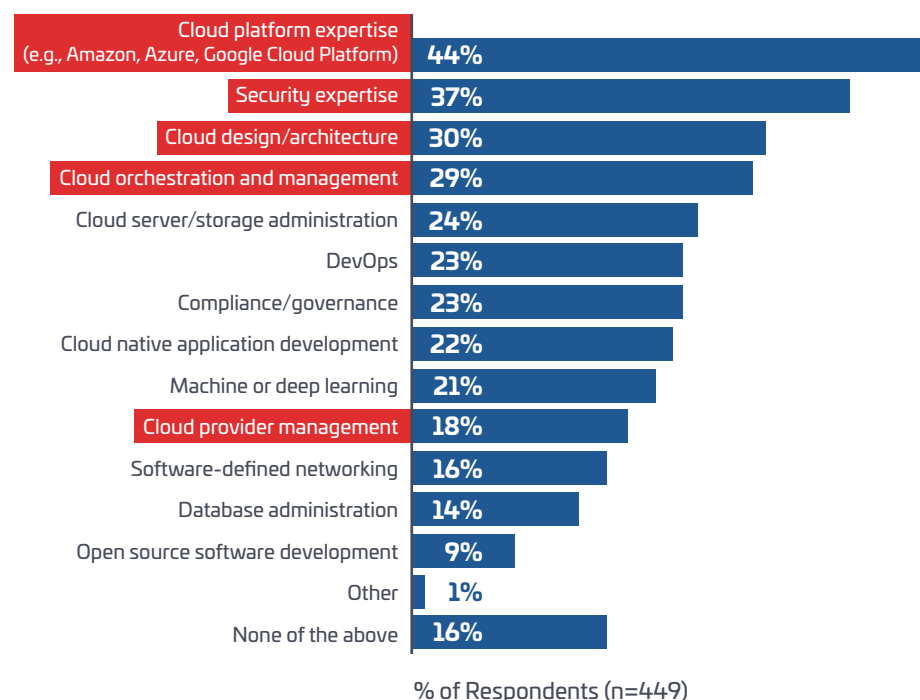
Solving for lack of cloud expertise

Utilizing a Managed Service Provider or Cloud Enablement Partner can help organizations define and execute on a cloud migration strategy tailored to work for their unique business requirements. MSP's can also help augment internal resources and skillsets that might lack specific expertise.

According to 451 Research, the top skills that Cloud Enablement Partners can help enterprises in their journey to the Cloud are shown below

Figure 3: Skills Sought From Cloud Enablement Partner - Next 2 Years
Source: 451 Research's Voice of the Enterprise: Cloud Hosting & Managed Services, Vendor Evaluations 2018
Q. For which of the following skills is your organization most likely to engage a cloud enablement provider over the next 2 years?

Skill	%
Cloud platform expertise (e.g., Amazon, Azure, Google Cloud Platform)	44%
Security expertise	37%
Cloud design/architecture	30%
Cloud orchestration and management	29%
Cloud server/storage administration	24%
DevOps	23%
Compliance/governance	23%
Cloud native application development	22%
Machine or deep learning	21%
Cloud provider management	18%
Software-defined networking	16%
Database administration	14%
Open source software development	9%
Other	1%
None of the above	16%

% of Respondents (n=449)

EdgeConneX has partnered with industry-leading Managed Solution Providers (MSPs). These MSPs bring years of experience to each engagement, collaborating, designing and deploying solutions that identify optimal uses for private, public, hybrid, and multi-cloud on-ramp implementations.
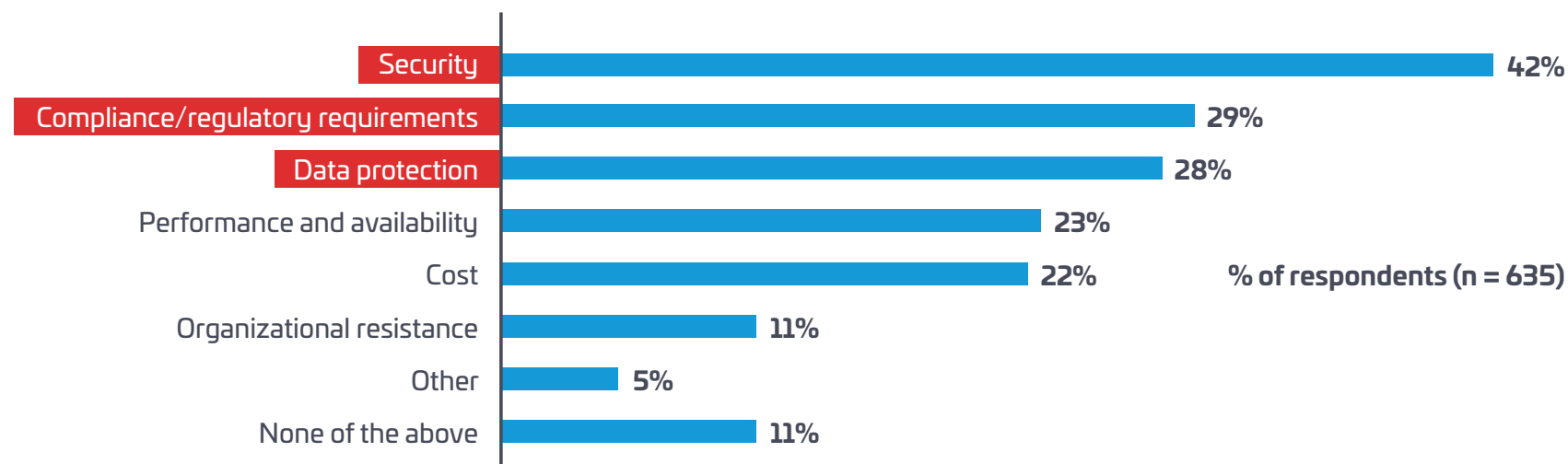
EdgeConneX Solution Partners

rackspace®   lume CLOUD SOLUTIONS   UNITAS GLOBAL   TELNET

Solving for Security Concerns

In a recent survey, 451 Research queried enterprises about the factors contributing to workloads being considered unsuitable for the public cloud.

Factor	%
Security	42%
Compliance/regulatory requirements	29%
Data protection	28%
Performance and availability	23%
Cost	22%
Organizational resistance	11%
Other	5%
None of the above	11%

% of respondents (n = 635)

Source: 451 Research, Voice of the Enterprise: Cloud, Hosting & Managed Services, Workloads and Key Projects 2018

Dedicated private access cloud connectivity solutions are far more secure than utilizing the public Internet. EdgeConneX offers access to direct and SDN-based cloud access solutions across our global edge footprint, delivering secure connectivity to all major cloud platforms. Leveraging best of breed cloud security solutions is also critical to protecting your workloads.

EdgeConneX works with partners committed to delivering complete cloud security solutions.

Solving for Latency

The Edge is all about proximity, which in turn results in better performance. By helping bring the cloud local to customers across our Edge data center footprint, we can help reduce the latency of cloud applications and ensures the best quality of service and experience for enterprises.

In addition, EdgeConneX® has joined forces with leading cloud access providers that offer dedicated cloud connectivity throughout our global Edge Data Centers® footprint. This also solves for latency and application performance challenges.

Reduced Latency
Improved Performance

"Applications work best when they're close to the point of interest. Because latency and bandwidth demands push tech to the edges, the applications performing the business functions must go with it."

(Forrester)

FORRESTER®

Significant Performance Improvements at the Edge:

aws
(600 miles)

Regional, Virtual Connection
~50% FASTER
than public Internet

PUBLIC INTERNET
32-38ms

CLOUD CONNECT
18ms

Response Time from Portland to: AWS US-West-1
(Silicon Valley)

Azure
(600 miles)

Regional, Virtual Connection
~45% FASTER
than public Internet
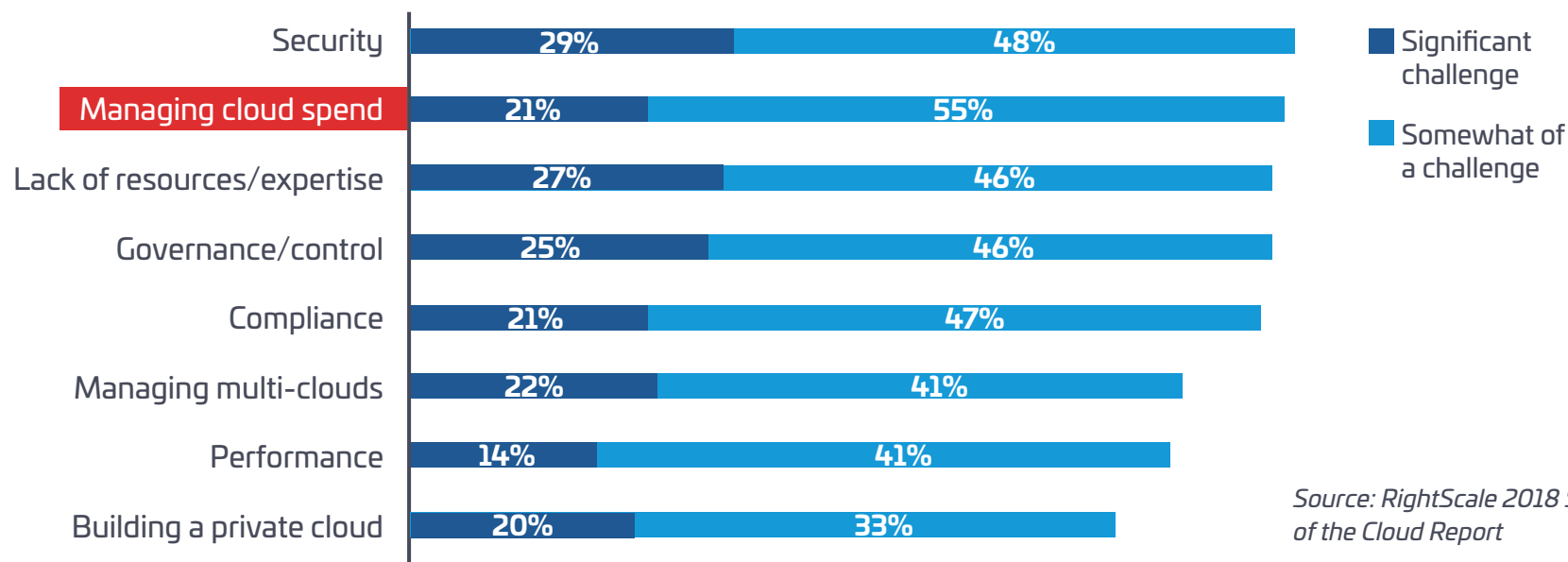
PUBLIC INTERNET
27-39ms

CLOUD CONNECT
18ms

Response Time from Portland to Azure US-West-1
(Silicon Valley)

Solving for Cloud Spend

One element of cloud spend that enterprises can manage and plan for is the cost of network transport to the cloud platforms they use. By having a cloud solution locally served, enterprises not only benefit from the added security and flexibility of a hybrid multi-cloud solution, but they also save significant capital by reducing the network transit costs incurred when connecting to the cloud hundreds or even thousands of miles away.

Category	Significant challenge	Somewhat of a challenge
Security	29%	48%
Managing cloud spend	21%	55%
Lack of resources/expertise	27%	46%
Governance/control	25%	46%
Compliance	21%	47%
Managing multi-clouds	22%	41%
Performance	14%	41%
Building a private cloud	20%	33%

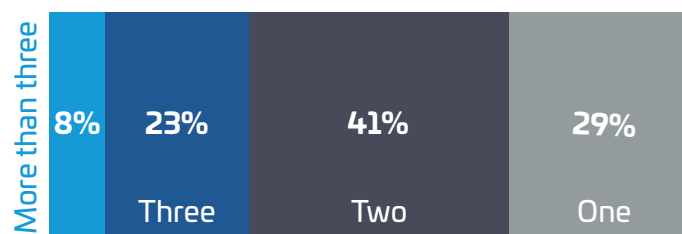*Source: RightScale 2018 State of the Cloud Report*

EdgeConneX has a global Edge data center footprint providing a distributed architecture for cloud deployments located in closer proximity to end users and their business.

Solving for Multi-cloud flexibility

According to 451 Research, 72% of enterprises want access to more than one Cloud Service Provider.

72%

Number of public cloud vendors in use
% of respondents using IaaS/public cloud (n=267)

More than three	Three	Two	One
8%	23%	41%	29%

Top Reasons For
Using Multiple Public Cloud Vendors

Reason	1-999 employees	1,000+ employees
Access to vendor-specific platform capabilities	40%	39%
Optimizing for cost	23%	27%
Business units/individuals within the organization use different IaaS vendors	10%	30%
Specific preferences of my customers	17%	19%
Vendor lock-in concerns	10%	20%
Vendor selection influenced by a third party (e.g., managed service provider, consultant, ISV)	17%	11%
Currently comparing and evaluating IaaS environments/vendors	12%	13%
Vendor-specific connectivity to my partners/suppliers	13%	13%
Currently migrating workloads between IaaS environments/vendors	10%	8%
Corporate policy demands multiple suppliers	2%	10%

■ 1-999 employees (n=52)

■ 1,000+ employees (n=115)

(< 10% Not Displayed)

Source: 451 Research Voice of the Enterprise: Cloud, Hosting & Managed Services Workloads & Key Projects, Q1 2019

Multi-Cloud Access

Megaport

packetfabric

Telia Company

NETFOUNDRY

ECX has partnered with leading network solution providers that enable multi-cloud access solutions at the edge.

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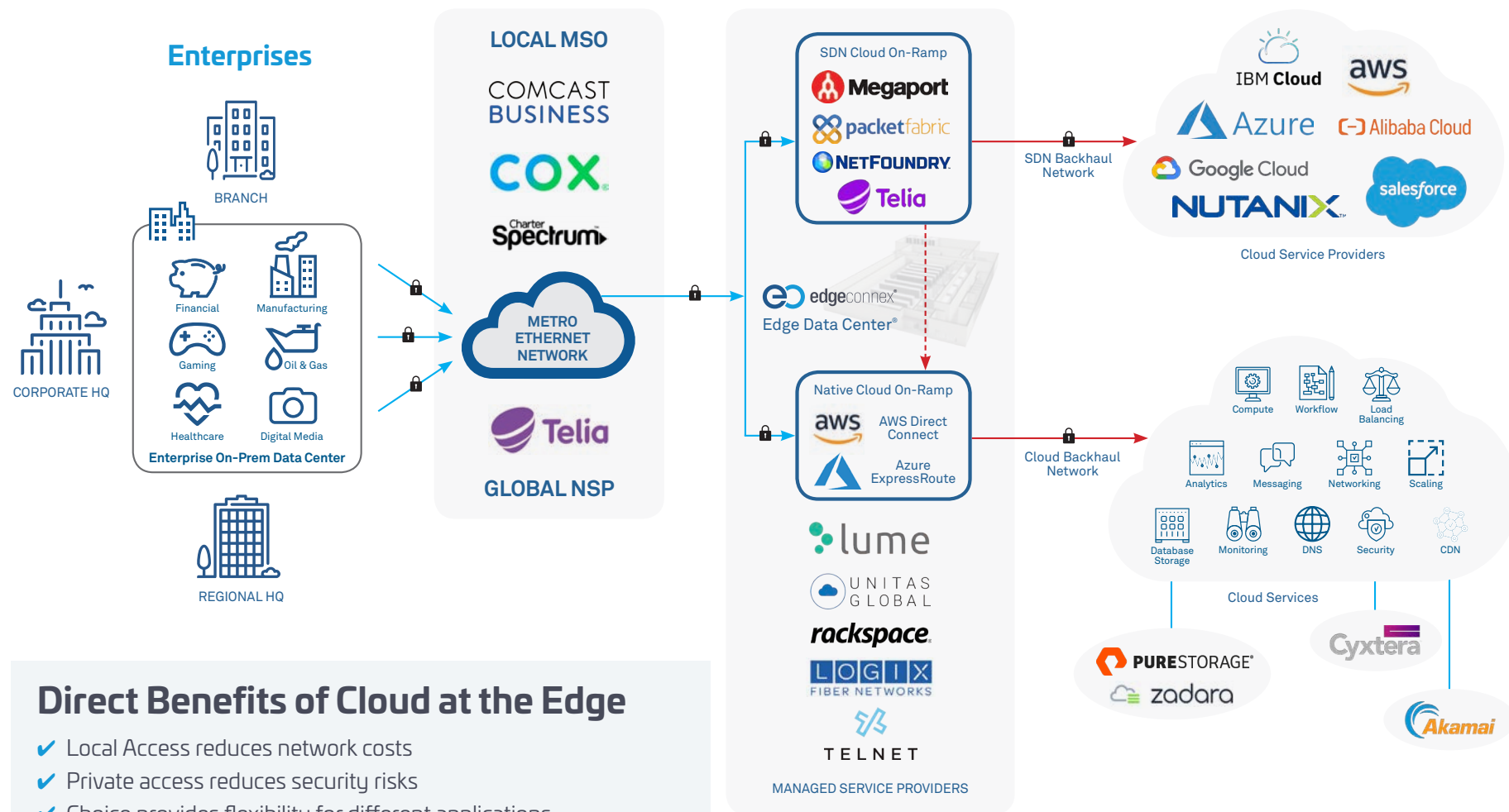# Benefits of an Integrated Edge Cloud Solution

Reference Architecture

Enterprises

- BRANCH
- CORPORATE HQ
- Financial
- Manufacturing
- Gaming
- Oil & Gas
- Healthcare
- Digital Media

Enterprise On-Prem Data Center

- REGIONAL HQ

LOCAL MSO

COMCAST BUSINESS

COX

Charter Spectrum

METRO ETHERNET NETWORK

Telia

GLOBAL NSP

Edge Market

SDN Cloud On-Ramp
- Megaport
- packetfabric
- NETFOUNDRY
- Telia

SDN Backhaul Network

edgeconnex
Edge Data Center®

Native Cloud On-Ramp
- aws — AWS Direct Connect
- Azure ExpressRoute

Cloud Backhaul Network

lume
UNITAS GLOBAL
rackspace
LOGIX FIBER NETWORKS
TELNET

MANAGED SERVICE PROVIDERS

Cloud Solutions

IBM Cloud, aws, Azure, Alibaba Cloud, Google Cloud, NUTANIX, salesforce

Cloud Service Providers

- Compute
- Workflow
- Load Balancing
- Analytics
- Messaging
- Networking
- Scaling
- Database Storage
- Monitoring
- DNS
- Security
- CDN

Cloud Services

PURESTORAGE
zadara
Cyxtera
Akamai

Direct Benefits of Cloud at the Edge

✔ Local Access reduces network costs
✔ Private access reduces security risks
✔ Choice provides flexibility for different applications
✔ Proximity improves application performance
✔ Proximity enables hybrid cloud without DIY Capex requirements
✔ Integrated Solution reduces complexity

edgeconnex®

![edgeconnex logo]

EdgeConneX helps bring Cloud Service Providers and Enterprises together, at the Edge

40+
data centers

30+
unique markets worldwide

6-9
months to build

>600,000
data points monitored by EdgeOS

100%
data centers built on time & budget

5 of 5
of the world's largest companies are our customers

99.999%
uptime

>200
hyperlocal EdgePops deployed

Empower YOUR Edge

Hyperlocal to Hyperscale Data Centers

With our global platform of edge data centers, and working closely with industry-leading partners, EdgeConneX delivers integrated edge cloud solutions that help solve the most pressing cloud adoption challenges facing both enterprises and cloud providers today.

North America

Seattle
Portland
Minneapolis
Madison
Toronto
Boston
Sacramento
Santa Clara
Salt Lake City
Chicago
Detroit
Pittsburgh
Denver
Las Vegas
Richmond
Norfolk
San Diego
Nashville
Phoenix
Memphis
Atlanta
Houston
Tallahassee
Jacksonville
New Orleans
Miami

Edge Data Center Location

South America

Santiago
Buenos Aires

Europe

Dublin
Amsterdam
Warsaw
Munich

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