edgeconnex®

HYPERLOCAL TO HYPERSCALE DATA CENTERS

EDGEBOOK

User Experience is Everything

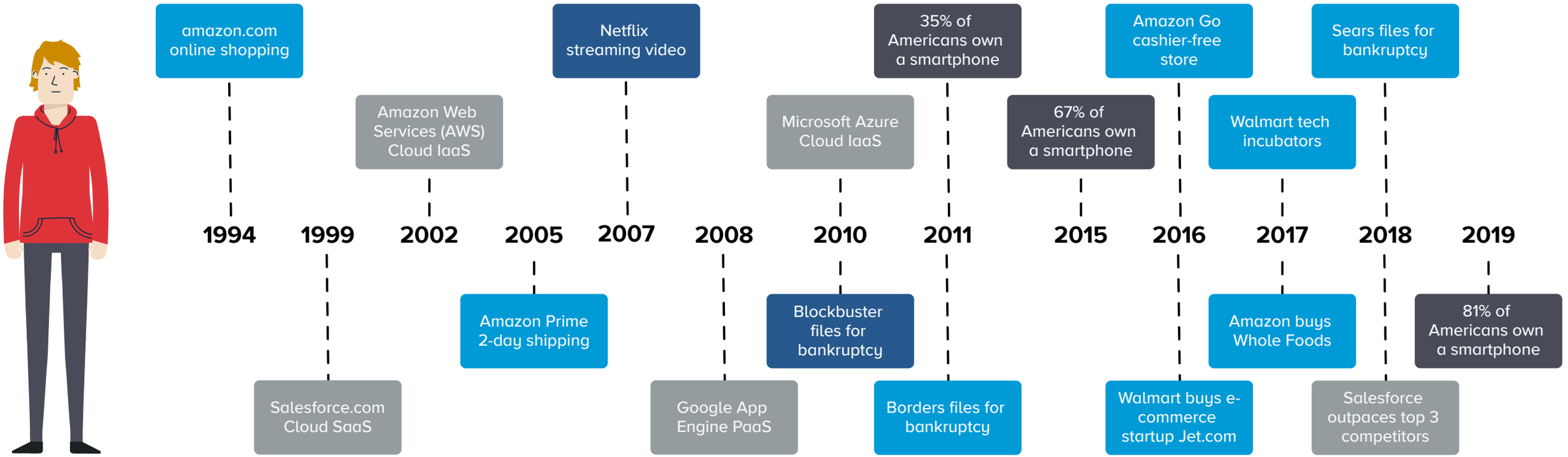
FOR INNOVATORS IN: NETWORK & MOBILE | CONTENT & DIGITAL MEDIA | CLOUD & IT SERVICES | EMERGING TECH | GAMING

You work hard to ensure your service is as fast, powerful, and available as your users demand. That's your competitive edge. Empower it with a data center partner that can deliver high proximity and connectivity, high power, at any scale anywhere.

User Experience Drives Technology Change

In the Digital Age, innovators win by rethinking how to deliver the best experience for their users. That starts a virtuous cycle. As users have great experiences enabled by technology in one area of their lives, they come to expect similarly great experiences in all areas, and the companies that deliver those great experiences win. For example:

- In retail, Amazon has been a leader in leveraging new technology capabilities to deliver superior user experience
- In entertainment, Netflix enabled users to watch movies on demand, launching the streaming era
- Salesforce.com showed users they could access applications from any device, anywhere – and ushered in the cloud computing era
- Driving the increased use of services like these has been the fast-rising adoption of smartphones



User Experience is Everything (Almost)

Whether you're a legacy leader or a new entrant, in network & mobile, content & digital media, cloud & IT services, emerging tech, or gaming – cost efficiently delivering a better user experience than your competitors is the key to winning.

> *It's all about the customer, whether they're outside your walls or the department next door. Make no mistake, their expectations grow higher every day. If they have a bad experience, or are left waiting for your bells and whistles, and your competitor delivers first, they aren't coming back."*
>
> **– IBM**

> *Companies will win or lose based on experience, and CX [customer experience] is still the vital point of differentiation and growth."*
>
> **– FORRESTER**

Cost Efficiency Matters Too

In most internet-based businesses, barriers to entry are low and competition is fierce. At any given time, there is a pack of startups – and likely some incumbents, too – trying to eat your lunch. So while delivering the best user experience is essential, it alone is not sufficient. You have to cost efficiently deliver the best user experience.

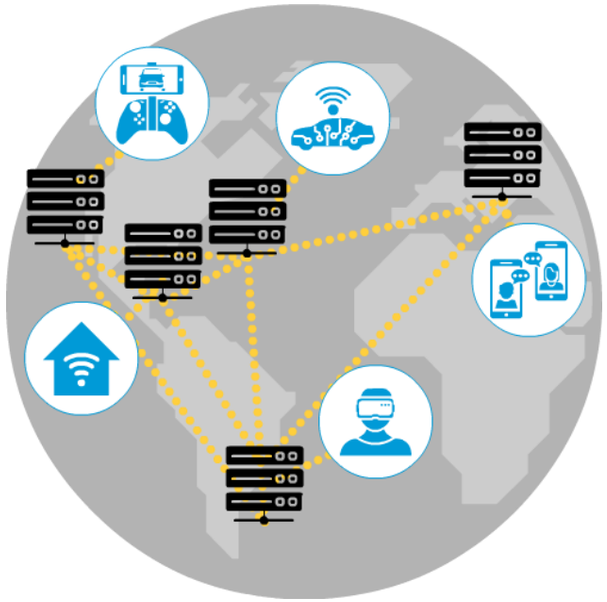
BOTTOM LINE:

You **gain** competitive advantage by delivering the best user experience. You **keep** competitive advantage by delivering the best user experience cost efficiently.

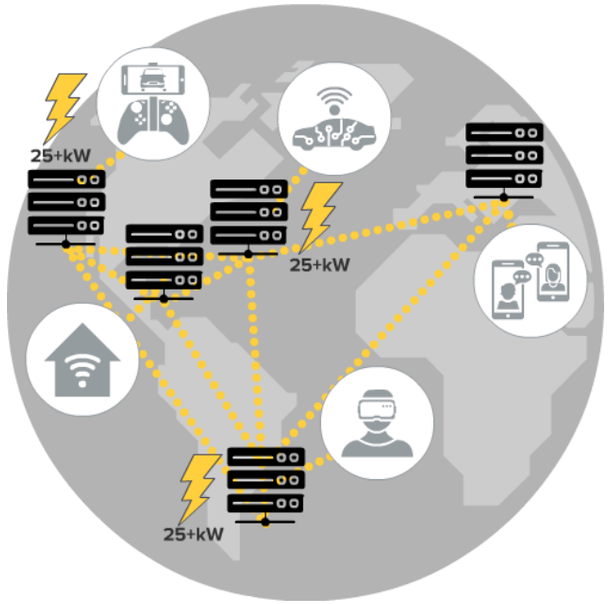
There Are Prerequisites to Cost Efficiently Delivering a Great User Experience

But They're Increasingly Hard to Achieve With Today's Internet Infrastructure

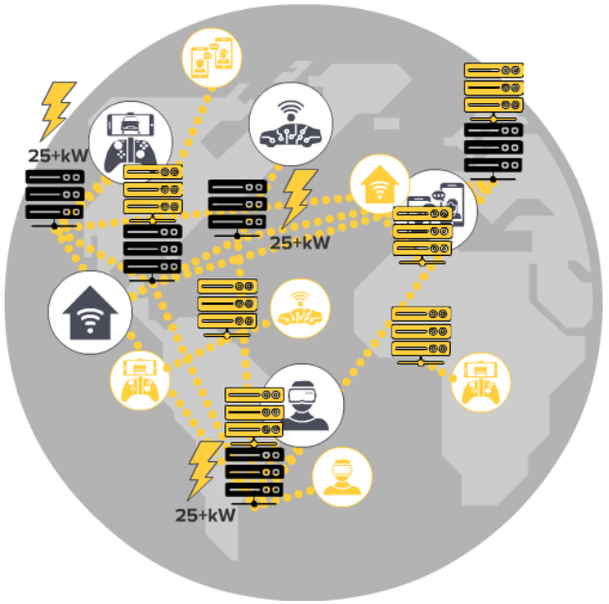
Low Latency



Connectivity



High-density Power



Scalable Capacity

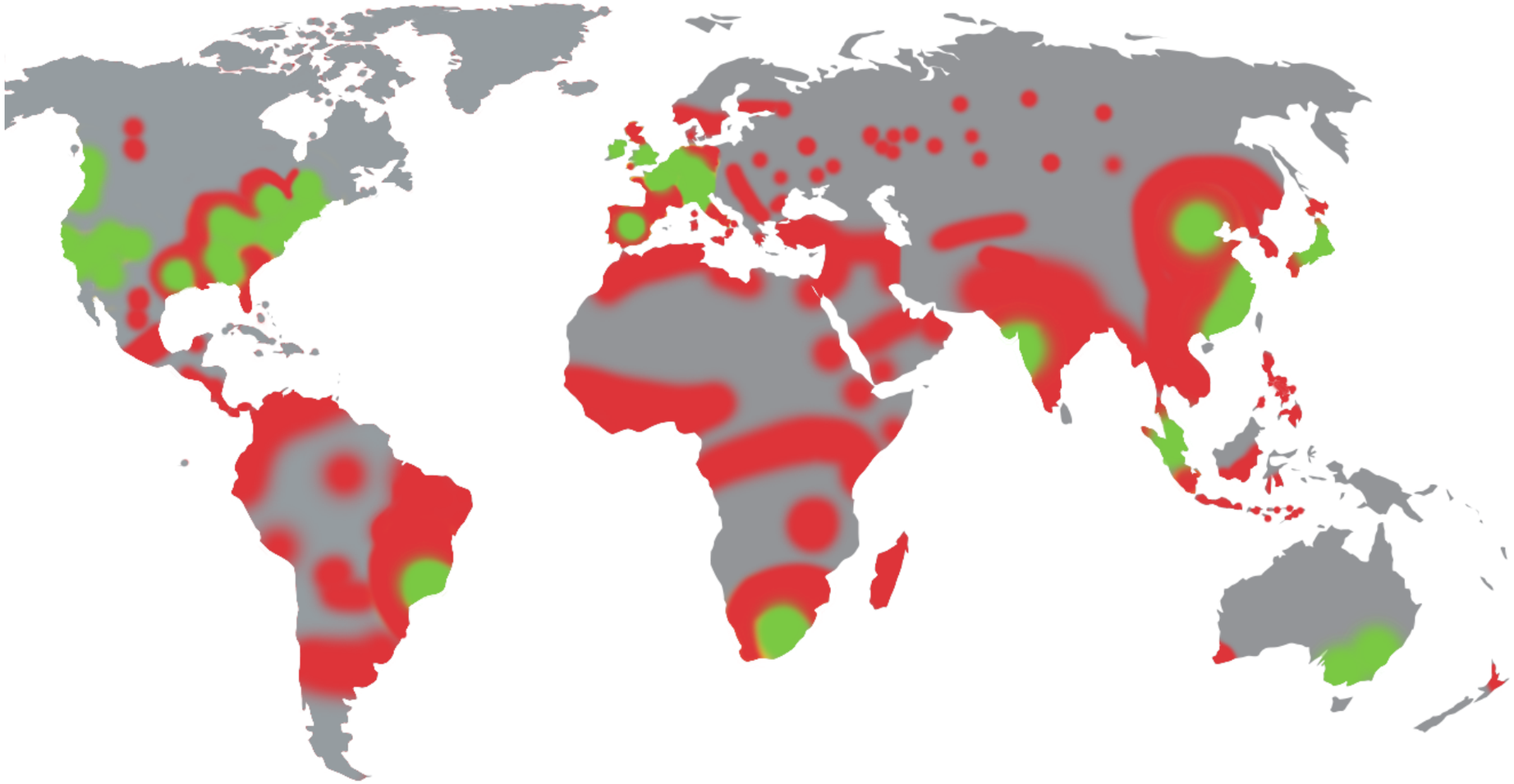
These UX Prerequisites Are Interrelated

Geographic proximity and network connectivity work together to deliver low latency. High-density power ensures you can run the kinds of compute-intensive technologies that many modern applications demand. Scalability ensures you have the compute, storage, and network capacity required to deliver for your users, no matter how fast their demand rises.

SPEED MATTERS

Low Latency is Key to a Great User Experience
To Achieve It, You Need Capacity Within Geographic Proximity to Your Users

The map shows cities with populations above 1 million and low latency / high latency to the nearest top data center market (as ranked by Cushman & Wakefield, 2020).



7.5 billion

potential users are outside low latency range of a top data center

BOTTOM LINE:

If you're only in the top data center markets, you're not close enough to all of your customers. In a world where "slow is the new down" that's a huge competitive disadvantage.

Key to winning is the ability to have capacity wherever your end users are – whether that means partnering with an existing provider or building net new.

SPEED MATTERS

To Be as Fast as Users Demand, Get Thee to the Edge

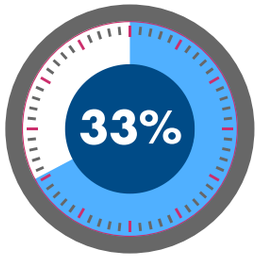
By localizing data acquisition and control functions, as well as the storage of high bandwidth content and applications in close proximity to the end user, edge computing facilities circumvent the distance, capacity constraints, multiple network hops, and centralized processing loads that exist in traditional internet architecture.

The Dividends Can Be Tremendous

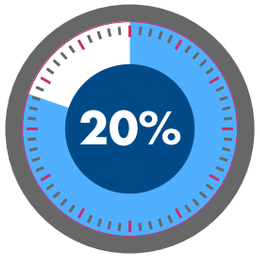
CLOUDFLARE

Powers more than 10% of all internet requests

When Cloudflare deployed with EdgeConneX they realized significant improvements in response times (verified by Cedexis):



in Minneapolis metro area



in Portland metro area

EDGE IN ACTION

packet

The EdgeConneX data center in Detroit, MI is home to Sprint's Curiosity™ IoT platform (running on Packet's bare metal edge cloud infrastructure). The deployment is emblematic of the future demands at the edge where emerging applications and workloads like IoT or autonomous vehicles are highly latency sensitive and require very proximate compute resources.

> *EdgeConneX is an ideal partner to help Packet bring the benefits of edge computing to Detroit, as well dozens of key markets globally. What makes this deployment special is that we're able to activate three key elements at once: bare metal cloud, rich local connectivity, and end-to-end wireless IoT services. It's like an edge computing triple play!"*
>
> **– PACKET CO-FOUNDER AND CEO ZACHARY SMITH**

Learn more

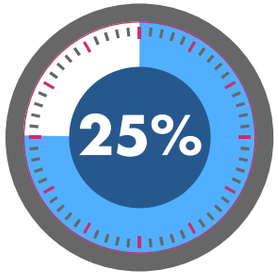
Geographic Proximity Also Matters for Cost Efficiency

Backhauling data from edge devices to a centralized data center is already costly and causes bottlenecks, and that's only going to get worse as data volumes increase. The solution: localize data processing in geographic proximity to where the data is produced.

> *While latency mitigation is an important use case, it is probably not the most valuable one. Another use case for edge computing is to minimize network traffic going to and from the cloud, or what some are calling cloud offload, and this will probably deliver at least as much economic value as latency mitigation."*
>
> **– VENTURE CAPITAL INVESTOR JAMES FALKOFF**

The Dividends Can Be Tremendous:

Impact of localization for world's largest MSO



improvement in video re-buffering

Impact of localization for CDNs

50%

reduction in transport costs

=

$110 million

savings

To Achieve Low Latency, Connectivity Matters, Too

> *How do we move around all the data that we're creating? The answer is two-fold: Bigger and faster networks, along with distributed compute capacity to perform 'data thinning' before sending business-critical datasets across the network."*
>
> **– RICH MILLER, EDITOR AT DATA CENTER FRONTIER**

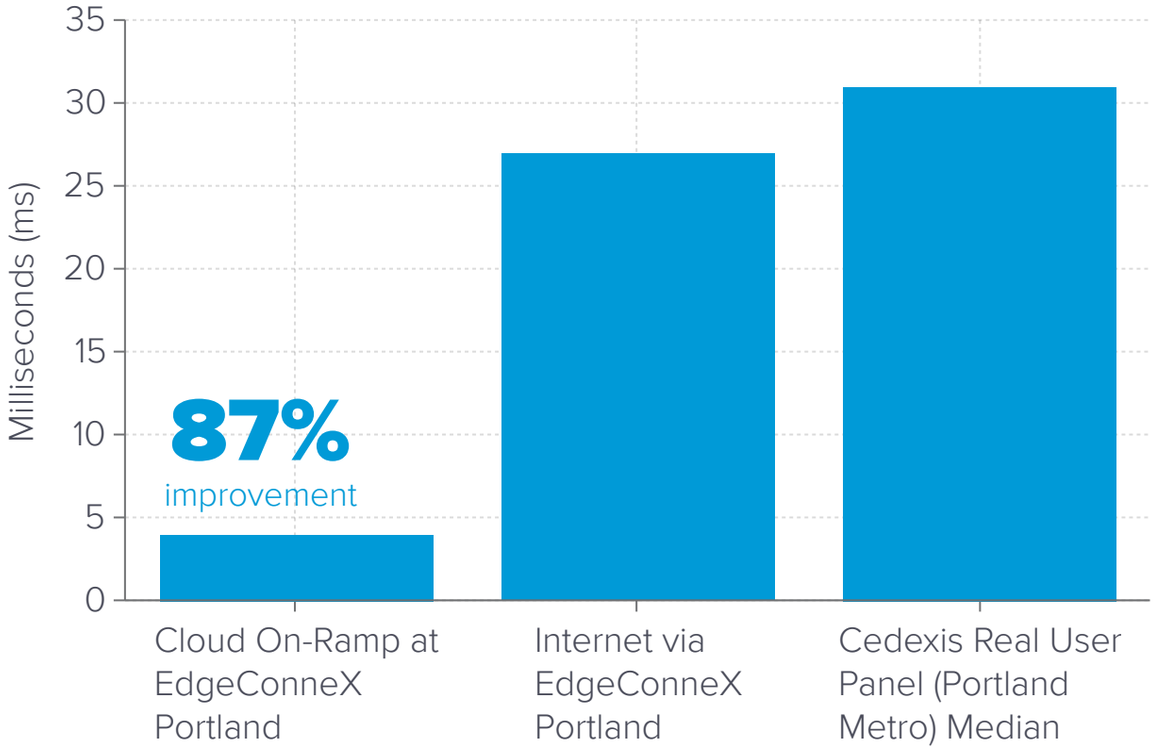
The importance of efficiently distributed network capacity – and a diversity of network access solutions – will only increase as network traffic increases.

Highly localized and proximate edge data centers alleviate network bottlenecks, reduce latency and improve performance. They do this by enabling peering at the edge and acting as local gateways for high speed connections not only to the core, but also to other edges.

In this way, the edge and the core can work together to allow companies to optimize traffic flows and choose for themselves where data computing should occur, according to latency, cost and performance requirements.

Cloud providers' regional architecture means slower performance away from local nodes. Cloud on-ramps provide a low-latency performance improvement (in addition to a secure connection) that occurs when skipping the public internet. Even over a distance of just 200 miles, this can make a significant difference.

Response Time from Hillsboro, OR to AWS US-West-2



To Maximize Performance and Minimize Cost, Get Thee to the Edge

The Dividends Can Be Tremendous

COMCAST BUSINESS

Comcast Business leveraged direct access to a localized AWS Direct Connect cloud on-ramp within an EdgeConneX edge data center to modernize their end customer's ERP system.

The end customer realized:

Reduced latency vs. using the public Internet

Reduced net operating cost (via pricing benefits for data egress fees)

And Comcast realized:

10x

Increase in monthly revenue

EDGE IN ACTION

Cross Connects

Virtual Connections

Cloud Interconnection

Peering Exchanges

Akamai

"The EdgeConneX edge data center model enables new opportunities for in-market interconnection that offer a substantial performance improvement over the traditional centralized interconnection model."

– NOAM FREEDMAN, CHIEF NETWORK ARCHITECT AT AKAMAI

Learn more

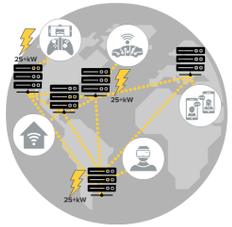
POWER DENSITY MATTERS

Leveraging Compute-Intensive Technologies is Key to Winning the Future

Increasingly, applications that require low latency also depend on compute-intensive technologies like AI and deep learning. From gaming and virtual reality to IoT and autonomous vehicles, leveraging compute-intensive technologies is the key to winning the future.

> *'Machine learning is now table stakes for every tech company, large and small,' writes Fred Wilson, a partner at Union Square Ventures. That's driving a hardware arms race, featuring more innovation than the chip sector has seen in years. Intel says AI is creating an 'insatiable' demand for faster, more power-efficient computing hardware."*

– RICH MILLER, EDITOR AT DATA CENTER FRONTIER



High-Density Power Also Matters for Cost Efficiency

In a data center built to support densities of no more than 5-10 kW, running compute-intensive technologies requires a larger footprint and more energy devoted to cooling. In contrast, in a data center purpose-built for high density, compute-intensive technologies can be run on a standard footprint with standard containment solutions. Given that energy is the single largest operating expense in most data centers, energy efficiency is a huge cost saver.

EDGE IN ACTION

NVIDIA

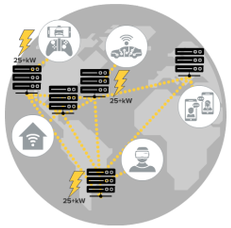
> *AI is now essential to business success, and EdgeConneX's colocation offerings ensure that customers can deploy their DGX systems in an environment optimized for high-performance GPU workloads. With a DGX-Ready Data Center solution from EdgeConneX, enterprises can focus on getting business value from AI faster, without having to spend time and budget on the technical requirements of a specialized infrastructure deployment."*

– TONY PAIKEDAY, DIRECTOR OF PRODUCT MARKETING FOR DGX SYSTEMS AT NVIDIA

Learn more

POWER DENSITY MATTERS

Compute-Intensive Technologies Require a Data Center That Can Support Densities of 25+ kW Per Rack



Compute-Intensive Edge Applications Are Key to Winning the Future

Emerging tech

e.g. industrial IoT, autonomous vehicles, and smart cities

Sending massive volumes of sensor data to and from a centralized data center is slow and costly. They who can process more quickly and more cheaply, win.

Content & digital media

e.g. high-resolution video streaming and AR/VR

Today's customers have a taste for the possible and more choice than ever before. Competitive advantage demands staying on the cutting edge.

Cloud & IT Services

e.g. computer-aided engineering, financial risk modeling, genomic sequencing, and seismic imaging

Eliminating long wait times and lost productivity enables faster innovation.

Gaming

e.g. ray tracing and AI-accelerated de-noising

Delivering the latest, and greatest, in graphics and performance is key to gamer loyalty.

These Applications Are Power Dense

25-40 kW

Average Density of Traditional Data Centers

5-10 kW

BOTTOM LINE:

Traditional computing platforms and legacy data centers are not equipped to handle the new demands of compute-intensive technologies.

SCALABILITY MATTERS

Scalable Capacity is Key to Avoiding the Worst Kind of User Experience

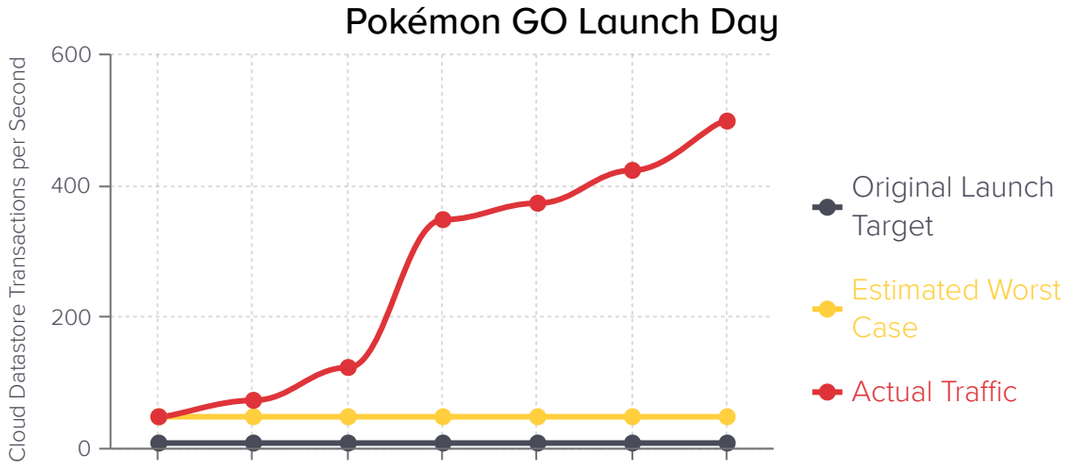
Slow might be the new down, but down is still a death knell for consumer applications. That's a lesson Niantic learned the hard way when launch-day demand for Pokémon GO outstripped target traffic by 50x. **Winning the understatement of the year award, Niantic CTO Phil Keslin said it was a "hair on fire experience."**

When Disney announced the upcoming launch of its new streaming service, analysts predicted 8 million subscribers by the end of 2019. By the end of the first day, Disney Plus has signed up 10 million users. **The headlines were exactly the opposite of what a company would hope for: "Disney Plus isn't technically down, but good luck watching anything."**

Both Niantic and Disney were able to scale capacity relatively quickly and deliver the kind of experience users expected. But that's not always the case; for new games and platforms especially, a poor launch can doom the entire release, as users are unlikely to come back to try again tomorrow.

BOTTOM LINE:

Gamers are notoriously demanding when it comes to latency, and unavailability is a non-starter. Same goes for streaming video users, whose top complaint is buffering (second only to "too many ads"), according to 451 Research.



Scaling Capacity When Home is the New Edge

During the COVID-19 pandemic, hundreds of millions of people around the world shifted to working and going to school from home. As they did, the home became the new edge, and the demand was astounding.

1900%
Increase in highest daily Zoom meeting participants

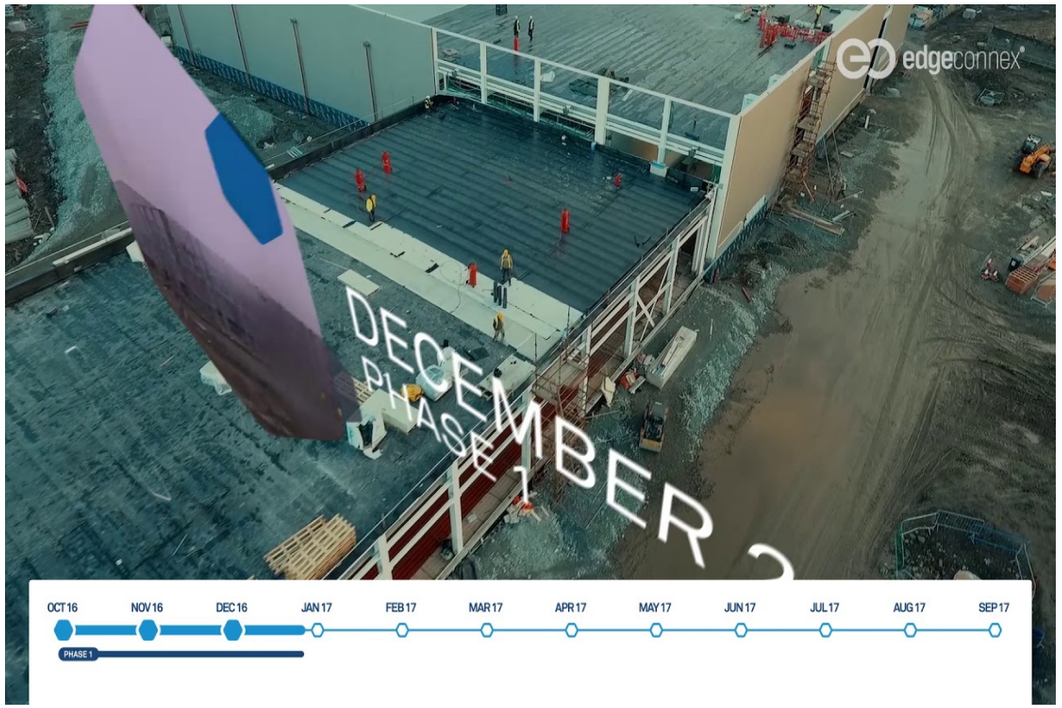
700%
Increase in demand for AT&T's virtual private network

8 Tbps
Peak traffic on the Amsterdam IX

SCALABILITY MATTERS

Ensuring Availability in the Face of User Demand That Could be Exponentially Higher than Anticipated – and Doing it Cost Efficiently – Requires a Partner That Can Scale Fast

Leveraging cloud for burst capacity can be a smart move for managing launch-day demand. But when the 50x demand persists, cloud is not always the most economical solution – or latency requirements demand closer proximity to end users. Those cases call for an edge data center partner that has **existing capacity** and a proven track record of quickly bringing **net new capacity** online – when and where you need it to serve your users.



EDGE IN ACTION

Existing capacity

Across our global portfolio of 40+ data centers, modular data halls from 500 kW to 1+ MW support rapid deployments.

Net new capacity

In a power-deficient market, while the local utility worked to generate adequate power, EdgeConneX innovated a medium-term solution using N+2 natural gas generators for a new 14 MW facility and delivered the new data center in less than 10 months.

Cost Efficiently Delivering a Great User Experience Requires a Re-architecture of the Internet

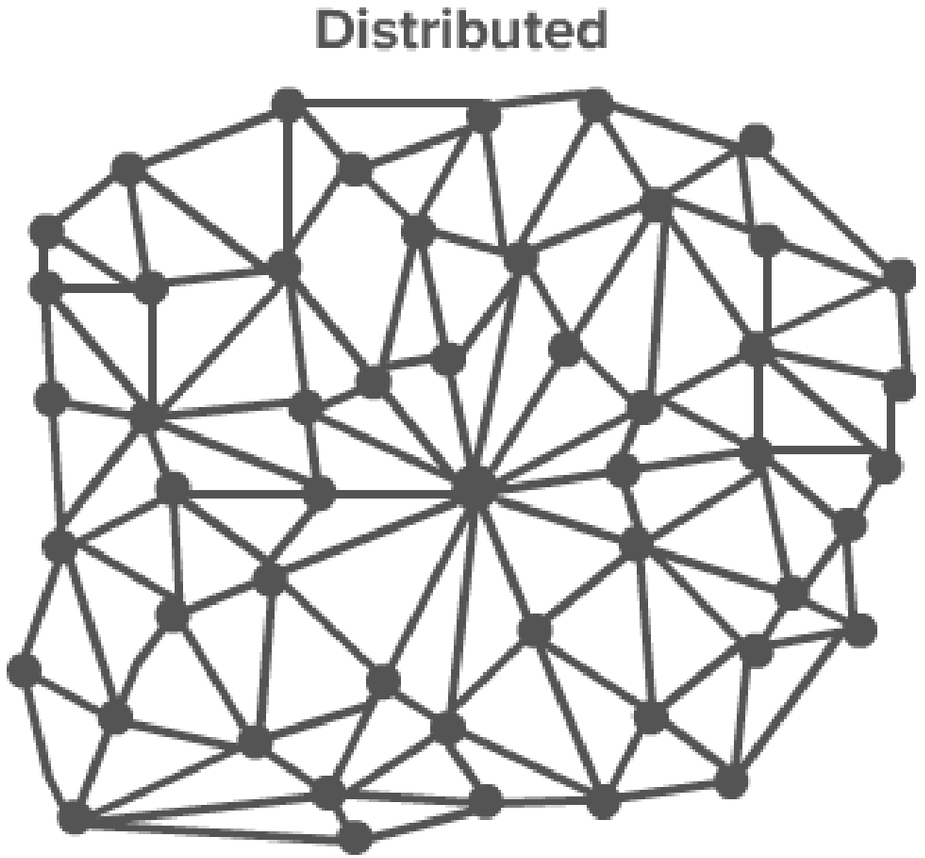
Under the legacy approach of centralized data centers and core networks, too many challenges around capacity, lower latency and cost exist. Edge data centers can solve for these issues by moving computing and data storage closer to the end-user, thus enabling higher capacity, lower latency and reduced expenditures. In other words, edge data centers can help us rearchitect the internet in a way that will support the flood of data and massive traffic flows.

> *Enterprises are using edge topological ideas to cut WAN costs by half, while improving resiliency and improving user experience by 200%."*
>
> – GARTNER

BOTTOM LINE:

In addition to cutting latency and costs, a distributed architecture enables you to better align supply with demand. It doesn't matter whether you or your partners have capacity in a particular market. If user experience demands you be in that market, you should have a partner that can deliver you capacity there within six months. And it should be flexible capacity so you can easily grow into the market.

A Re-architected Internet is Distributed



CONCLUSION

The Edge is Not a Location. It's How You Cost Efficiently Deliver the User Experiences That Will Keep You on the Competitive Edge.

The edge is defined by you. Broadly, it's distributed compute, storage, and/or network capacity at whatever scale and location you need to cost-efficiently deliver the best experience for your users – optimized for particular workloads given latency requirements and cost constraints. Peering at the edge and local gateways enable high speed connectivity between edge deployments and to/from the core.

edgeconnex®

GET YOUR COMPETITIVE EDGE

Cost Efficiently Deliver a Great User Experience

Since 2009, EdgeConneX has been helping the biggest, most demanding companies in the network & mobile, content & digital media, cloud & IT services, emerging tech, and gaming industries to cost efficiently deliver the best user experience – the kind that has kept these companies on the competitive edge.

- **Speed:** We help you get to where your users are, with highly localized and proximate edge data centers and a diversity of network access solutions.
- **Power Density:** We enable you to leverage the compute-intensive applications that are key to winning the future, with data centers that efficiently support up to 40kW per rack on a standard footprint with a standard containment solution.
- **Scalability:** We help you align supply and demand, with existing capacity around the world and the ability to build net new within six months.

EdgeConneX provides the connectivity, power density, and scalable capacity you need to cost efficiently provide the best user experience – the kind that keeps you on the competitive edge.

EMPOWER YOUR EDGE
TALK TO AN EDGECONNEX SOLUTION ARCHITECT TODAY

edgeconnex.com
info@edgeconnex.com
+1 (866) 304-3217