

CENTRA DIGITAL

**THE FUTURE OF
INTERCONNECT
IN DIGITAL
INFRASTRUCTURE**

Our Perspective



WHY CENTRA

Our Mission – A Focus on Interconnect

Within the digital infrastructure and data center market today, interconnect provides a critical role, enabling carriers, hyperscalers, CDNs, enterprises, and other companies to transfer massive amounts of data securely and efficiently. Interconnect use cases include cross connects between two parties, connectivity within a metro or among multiple metros, public peering for Internet access, and cloud on-ramp to a cloud service provider. Regardless of the connection purpose or how it's enabled, interconnect is an indispensable element in digital infrastructure that underpins companies' ability to scale to meet their increasing demand (and their customers' demand) for digital services. Today, several factors are driving a step change in connectivity needs. These include:

OVERALL BANDWIDTH DEMAND

Nokia forecasts 24% annual growth in U.S. data traffic between 2022 – 2026

THE DEMAND FOR END-TO-END QUALITY-OF-EXPERIENCE (E2E QOE) USE CASES

These initiatives include AI, AR / VR, mobile cloud gaming, mission-critical IoT, and other latency sensitive applications

SMALL MARKET NEEDS

Equinix predicts that tier 2 and 3 markets will experience a surge in annual data growth of 29% from 2022 – 2025

This significant surge in data demand presents providers and customers with several important challenges related to connectivity and interconnect.

The Challenges

01. INADEQUATE FACILITIES

The first challenge is that in larger markets with robust connectivity hubs, the most connected facilities are often aging downtown buildings re-purposed as data centers. Called carrier hotels, these "accidental" connectivity hubs were often chosen based on their proximity to large carrier network facilities. These fiber-connected buildings were critical to the early growth of the internet but today create multiple challenges for carriers, hyperscalers, CDNs, and other users – they are 1) old (sometimes over 100 years old), 2) located in congested downtown areas that are difficult to access and move equipment in and out, and 3) often have limited physical, bandwidth, and power capacity to support growth.

02. FAST GROWING DEMAND

Second, interconnect needs are expanding rapidly. Drivers of increased connectivity demand include companies' needs to move digital products and services closer to end customers, address new E2E QOE use cases, expand to new markets where they've identified data capacity bottlenecks, and reduce the cost of data transport for workloads and content. Establishing new interconnect facilities and connection hubs in less connected areas, and those of high overall demand, would therefore provide a path to support the growth of digital services. Still, today this need and associated benefits are largely overlooked in the data center market.

Our Vision



THE OPPORTUNITY

The result of these connectivity challenges is a growing gap in neutral and modern interconnect in key population centers across the U.S.

To be certain, there's no lack of digital infrastructure growth and activity, but a key supply challenge for connectivity is that much of the investment and activity in the sector is focused on hyperscaler capacity, and AI activation. Of course, these are high-demand initiatives — each of these areas represents a critically important component of the larger digital services sphere and ecosystem. However, the focus on these areas only exacerbates the interconnect gap, which will negatively impact the potential for ecosystem growth, new services, and operations efficiencies.

Purpose Statement

This paper provides a perspective on customers' current and future connectivity and interconnect needs, the challenges of enhancing connectivity in legacy and under-connected markets, and how CENTRA's unique approach breaks a logjam of unmet needs that's preventing customers from fulfilling their full potential for digital growth through connectivity.



OUR SOLUTION

At CENTRA Technology, we're taking on the interconnection gap with a unique approach to unlock connectivity-related opportunities

Identifying high demand markets for connectivity, whether in existing interconnect hubs or relatively under-connected but growing places, CENTRA Digital Interconnect proposes to develop purpose-built, neutral, and highly connected **Connectivity First** facilities with resilient, flexible space to accommodate compute, storage and network needs. Through this approach, CENTRA believes that we will not only deliver on modern interconnect needs, but also complement other digital infrastructure categories (e.g., AI) and contribute to the overall growth of digital services.





When it comes to interconnect, we see digital ecosystem and customer opportunities for both topline growth and operational efficiencies, which combine to produce expanding margins for the industry.

01 Topline Growth

In terms of topline or revenue opportunity, a variety of ecosystem players from CDNs to hyperscalers to enterprises understand the customer experience benefits delivered through end user proximity. Being close to eyeballs reduces latency and improves the delivery of content, whether streaming, AR/VR, video, gaming, business applications, or online shopping. An improved experience has direct and indirect benefits to revenue, including higher retention, adoption of more digital services, and higher application usage. Connecting directly and locally to the customer, versus hundreds of miles away, therefore translates to higher revenue opportunity.

02 Operational Efficiencies

The flip side of this digital services equation is higher efficiency and lower costs. Especially in under-connected markets, local companies incur high transport costs to deliver content or to on-ramp to a cloud provider. These costs can be reduced or largely eliminated with local data centers and interconnected facilities. Rather than fetching content from hundreds of miles away, Internet hyperscalers and CDNs can cache content locally. Cloud Service Provider (CSP) hyperscalers can provide a local on-ramp to their cloud instead of paying the transport to hop to a facility in another metro. Multiplying these everyday examples by millions of transactions removes significant cost and allows providers to re-invest the savings or carry them to the bottom line to boost profits.

Topline Growth + **Operational Efficiencies** = **Expanding Margins**

Interconnect Customers



TELECOM CARRIERS

Among customers, telecom carriers are the original interconnect customers. Carriers use interconnect to offload traffic to one another or to the public internet. Through private peering, carriers can directly and efficiently move traffic back-and-forth across other networks. Public peering through an Internet Exchange (IX) enables traffic exchange from one to many. In either case, establishing more localized interconnect creates a better customer experience by keeping local traffic local, and reduces exposure to potential choke points at legacy interconnect hubs.



ARTIFICIAL INTELLIGENCE

Of all the existing and emerging applications, AI is certainly the most hyped, and for good reason: a Bloomberg Intelligence report forecasts Generative AI growth at an annual rate of 42% over ten years, achieving \$1.3 trillion in revenue and accounting for 12% of total technology spend by 2032. As consumer and enterprise use case requirements become increasingly AI-driven, interconnect demand will increase due to the CPU / GPU / TPU intensity required to support and enable AI applications.



CSP HYPERSCALERS

CSP hyperscalers (e.g., AWS, Azure, Google Cloud Platform, Oracle) are another key interconnect segment. Most CSP hyperscalers prefer or require dedicated data centers to house their own servers and equipment in highly secure environments, and therefore their owned facilities are often off limits for customer interconnect and cloud on-ramp. Therefore, these CSPs value data centers proximate to but separate from their own, using these facilities for customer cloud on-ramp and connectivity to their services. As CSP hyper-scalers expand their own digital infrastructure footprints, they are constantly on the lookout for qualified interconnect partners.



ENTERPRISES AND ADDITIONAL BENEFICIARIES

Other beneficiaries abound in this interconnect ecosystem. Enterprises moving workloads to the cloud capture the benefit of local and lower cloud on-ramp costs by eliminating long-haul transport. 5G, private networks, and smart cities applications, where much of the processing occurs locally, capture experience and cost advantages from incremental interconnect presence.

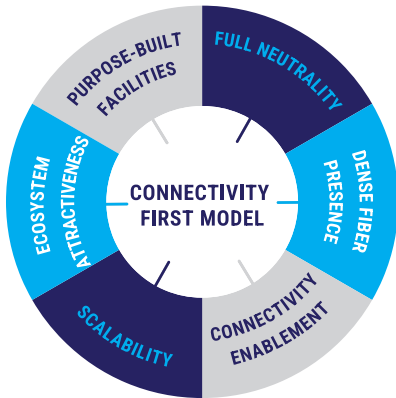


INTERNET HYPERSCALERS

Internet hyperscalers (e.g., Meta, Apple, YouTube, TikTok) and CDNs like Cloudflare and Akamai represent another interconnect segment. For these rapid growth players, the game is about proximity to customer eyeballs. The pressure to deliver a consistent and high quality mobile and home experience is paramount for internet hyperscalers and CDNs, who have millions of dollars of subscription and advertising revenue at stake. In addition to growing (or preserving) the revenue stream, these companies can eliminate the high costs of transport to fetch content from outside a customer's metro, capturing dual benefits to the top and bottom line.

Demand Summary

Taken together, a wide range of digital ecosystem players capture tremendous topline and bottom line benefits where interconnect is robust. Reliable interconnect presence enhances the customer experience and creates operational and financial efficiencies. And interconnect provides companies with more freedom to create. In fact, in our observation, a thriving interconnect model builds and fosters critical ecosystems that provides a "whole" much greater than the sum of its parts, with each new customer adding energy to a digital flywheel that generates a multiplier impact to ecosystem value. This flywheel effect creates tremendous value accretion for its participants, as well as a tangible sense of the marginal impact of each new participant. In the next section we turn our attention to the critical capabilities of a full interconnect platform.

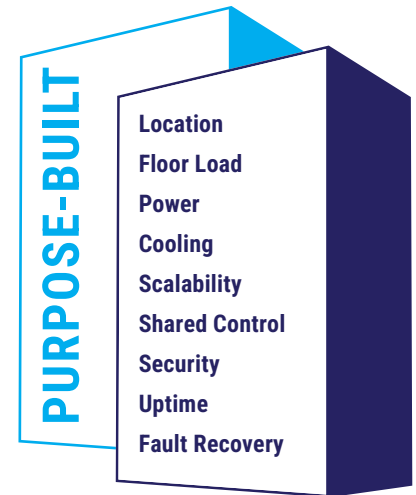


CENTRA’s Connectivity First Model

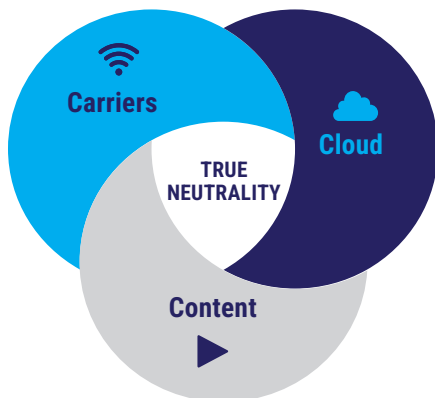
Having assessed the connectivity needs of the market and customers, CENTRA has developed a **Connectivity First** model for digital infrastructure. In our design, this **Connectivity First** model has the following capabilities and features: purpose-built facilities, full neutrality, dense fiber presence, connectivity enablement, scalability, and ecosystem attractiveness. In this section we provide a perspective on these capabilities and CENTRA’s approach.

PURPOSE-BUILT FACILITIES

First, a modern interconnect data center should be purpose-built — unlike many legacy carrier hotels, these facilities should be built with all the benefits of true data centers, with accessible locations, adequate floor load, resilient power, flexible cooling technologies, and scalable infrastructure (more on scalability below). Landlords and operators should be one in the same to control the entire physical property, and guaranteeing security, uptime, and fault recovery. In short, the modern interconnect facility should alleviate all the concerns customers have about legacy carrier hotels.



DATA CENTER NEUTRALITY



In our experience, data center neutrality is the core principle required to develop a robust interconnect platform. Today, the concept of “carrier neutral” is already well understood in digital infrastructure, but at CENTRA we believe that a commitment to neutrality includes carriers, clouds, and content — what we call “C3”. By providing a C3 facility where every carrier, cloud, and content provider can connect and interconnect (these players are often competitors by nature but peers by necessity), we can deliver on the promise of hyper-connected data centers that grow each individual’s potential value by increasing the overall size of the pie. The C3 principle is therefore a key to creating an ecosystem where carriers, hyperscalers, content providers, and enterprises have a neutral location to connect, conduct business, and incubate new applications.

Additional Connectivity First elements: dense fiber presence, connectivity enablement, scalability, and growing the ecosystem.



Dense Fiber Presence

The data center could come with established fiber routes connected to existing regional hubs (like a legacy carrier hotel) or long-haul fiber routes. Having a data center “pre-wired” in this way reduces a customer’s deployment time and ensures they are up and running quickly with a permanent fiber solution. Ultimately, customers may choose to install their own fiber, but having fiber available provides an option to use CENTRA fiber temporarily to establish service, and then convert to a permanent “owned” solution later. The concept of a “move-in ready” facility supports customers for whom time-to-market is a critical factor.



Connectivity Enablement

Another element of the **Connectivity First** facility is availability of public as well as private peering options. Independent IXs provide an established mode of public peering, and meet the standard for neutrality. A customer can peer directly to an IX or establish a virtual connection, but regardless of the method, the independent IX is a critical connectivity lever for accessing the public internet with customer equality of access.



Scalability For Growth

We believe that data centers should be able to scale, or flex, to accommodate customer and application growth. Designing data centers with an eye for modular, future add-ons requires additional land and potentially advance zoning for an expanded footprint. A blueprint that enables rapid expansion enables a digital infrastructure provider to keep up with, and even stay ahead of, customer demand and growth.

Summary: Growing the Ecosystem



This complementary set of **Connectivity First** capabilities enables the most important of all the foundational elements for interconnect: ecosystem attractiveness. Private peering requires at least two parties, but the real strength of interconnectivity is its multiplier effect as the connectivity ecosystem grows, fostering increasing levels of investment, development, and invention. Establishing a purpose-built, C3 neutral, move-in ready facility encourages players from across the ecosystem to stake out a presence and expand their connectivity footprints.

SETTING CRITERIA

Identifying Interconnect Markets

So how do we approach identifying the best interconnect markets? The U.S. has nearly 400 metropolitan statistical areas (MSAs) plus more than 500 micropolitan statistical areas (Micropolitans). That's over 900 markets and metros of some size that could support expanded or new interconnect infrastructure. What criteria can we apply to create a more manageable set of candidate list of connectivity hubs?

To answer this question, CENTRA has invested time and resources, including (and importantly) conversations with customers and ecosystem leaders. Our insights lead us to stratify the connectivity market by two geographic profiles: 1) Existing connectivity hubs, 2) Under-connected markets.

01 Existing Connectivity Hubs

We look for indicators of growing demand and limited supply in existing connectivity hubs with legacy carrier hotels or other "makeshift" connectivity facilities that are not purpose-built, modern, or fully neutral.



GROWING DEMAND

The expansion of CSP hyperscaler facilities in an area is a leading indicator of increased demand, and a direct source of connectivity need, as the hyperscaler seeks out facilities where its customers can on-ramp to its cloud. Growth of facilities for Internet hyperscalers and CDNs are also good demand indicators.



LIMITED SUPPLY

On the supply side, we look for pinch points among interconnect facilities. Carrier hotels that are at capacity with limited expansion options could benefit from a second **Connectivity First** provider in the market, since the second facility will be highly connected with the carrier hotel in order to maximize its impact to customers.

02 Under-Connected Markets

In under-connected markets, we augment the demand criteria in existing connectivity hubs.

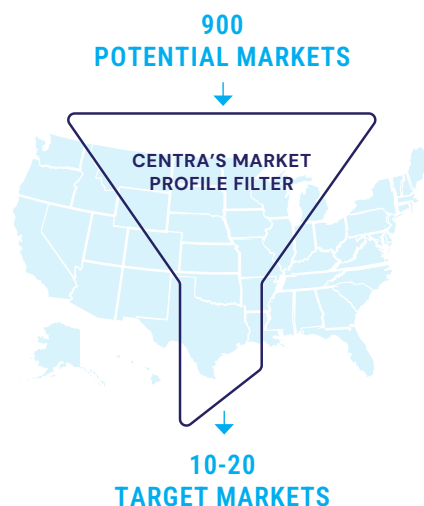


CONNECTIVITY DEMAND

In addition to hyperscaler, CDN, and social media customer expansion, we evaluate the enterprise presence and growth, as larger companies will increasingly move more of their workloads to public clouds. We also look at options for public peering. A recent establishment of an independent IX, for example, is a good indicator of growing demand for connectivity. In terms of supply, locating good complementary metros that can be extensions of core connectivity hubs is a key consideration. Markets within several milliseconds of one or more connectivity hubs, situated on long-haul fiber routes and inter-sections, promote demand and address the core needs of ecosystem players, whether carriers, hyperscalers, CDNs, or other enterprises.

Market Selection Summary

Applying customer insights along with supply and demand criteria to the two market profiles, CENTRA has filtered 900 markets to a set of 10–20 markets where we believe market factors are “taking the top off” of connectivity growth. These are the places where we can best add or augment connectivity and support digital services and ecosystem growth through a nationwide interconnect platform. Once we’ve validated the supply and demand dynamics above, finding suitable land to deploy the full set of interconnect capabilities — that is, a purpose-built, neutral, highly connected, and scalable data center — is the next step to expanding interconnect in an existing or under-connected market. In the next section we close with recommendations.





Step 1: Executive Team Alignment Questions

For customers and ecosystem leaders, we recommend a few key steps to determine if a **Connectivity First** data center model fits well with your strategy. A good first step is to ask alignment questions of your executive team, including:

01

CAN OUR BUSINESS...

realize an opportunity by extending its business reach to new markets and customer segments through connectivity? Could this approach unlock new topline growth, increase operational efficiencies, or both?

02

HOW COULD OUR BUSINESS...

benefit from improved network connectivity and peering? What are potential value-add opportunities to enhanced connectivity, improved peering with networks and cloud on-ramps, reduced latency, and improving overall network performance?

03

WOULD OUR BUSINESS...

capture value from a **Connectivity First**, move-in ready infrastructure model that shortens our deployments and time-to-market?

04

DOES OUR BUSINESS...

demand scalable digital infrastructure? Is our IT team finding it challenging to scale their operations in response to changing requirements in current digital infrastructure and inter-connect environments?

At CENTRA, we find that many customers are exploring new and creative answers to one or more of the questions above, which indicates that a **Connectivity First** model may be a good complement to, and fit with, their current strategy.

Step 2: Align Needs With Opportunities

A good next step is to align identified needs with new or existing connectivity opportunities. You may be looking to increase interconnectivity with carriers, customers, and other ecosystem enablers. Or bring your content closer to customers, whether businesses or consumers. Or lower long-haul transport costs and total cost of ownership (TCO). Or a combination of these and other use cases described earlier.

Step 3: Brief Providers And Find A Partner

Once you've identified these potential alignment areas for connected infrastructure, you're ready to brief providers and find a partner who shares your vision and can help to execute your strategic priorities. Below are some questions to help in your digital infrastructure partner evaluation:

01

HOW DOES A PROSPECTIVE PARTNER...

propose to address your needs? In evaluating your "needs fit," you should consider immediate as well as future needs. For example, partners with a holistic set of connectivity technologies and capabilities will create a smooth and clear path to future growth and revenue. And partners who support a robust connectivity ecosystem can multiply your value over time.

02

CAN THE DATA CENTER PARTNER...

meet you in strategic geographies that can expand your customer presence? Do they offer a nationwide interconnect platform? Partners who are proponents of purpose-built, strategically located infrastructure with a credible approach to new and under-connected markets can improve your proximity to customers and shorten your time-to-market for new digital infrastructure deployments.

03

CAN THE PARTNER...

demonstrate an ability to create operational efficiency for your business? A partner who understands the connection between next generation infrastructure and client economic benefits can become a trusted advisor to your business. Building digital infrastructure that leverages efficient technology can extend commercial benefits to customers, so understanding how a prospective partner proposes to lower your TCO is a critical decision input.

How To Get Started Summary

Understanding whether or how your business priorities align with a **Connectivity First** infrastructure model is a key first step on a business journey to explore new digital growth avenues. If enhanced interconnection shows promise for your business, briefing and evaluating partners can shed light on new approaches and ideas in addition to that all-important partner fit. By aligning your current and future business needs, geographic priorities, and operational and budget imperatives with partner capabilities, you'll be well positioned for a successful expansion of your digital capability.

$$\begin{array}{l} \text{Determine} \\ \text{Connectivity} \\ \text{First Alignment} \end{array} + \begin{array}{l} \text{Briefing \&} \\ \text{Evaluating} \\ \text{Partners} \end{array} = \begin{array}{l} \text{Well Positioned} \\ \text{For Successful} \\ \text{Expansion} \end{array}$$

WRAPPING IT UP

The data center market is rapidly evolving with the acceleration of overall data demand, a need for increased local customer presence, and the emergence of new applications like AI.

Looking Ahead

At CENTRA, we believe this rapid change requires a new data center model, where a **Connectivity First** approach provides complementary interconnect to existing connectivity hubs as well as emerging, under-connected markets.

This **Connectivity First** model, supported by enabling purpose-built infrastructure in strategic locations, can extend capacity and reach while providing a platform to increase the opportunity for inter-connectedness of the ecosystem, improve proximity to customers, enable emerging low latency applications, and deliver needed operational efficiencies. Ensuring a good alignment of your own business priorities with the benefits and levers of a **Connectivity First** digital infrastructure model can put your business on a higher trajectory of digital growth.

Your Trusted Partner

CENTRA believes we can be your trusted partner in developing and activating a distributed digital infrastructure model. Following are some proof points that separate us from others.

The CENTRA Difference



How We Help

At CENTRA, we help clients identify and solve their most critical infrastructure needs. Our mission is to accelerate the future of digital services for our partner ecosystem through our scalable, purpose-built interconnection platform. We activate and empower connected digital infrastructure by expanding connectivity in areas of highest need, offering tailored interconnect solutions for carriers, hyperscalers, enterprises, CDNs, and other ecosystem providers in order to enhance their digital capabilities and reach.

Proven Results

With connectivity at the center of CENTRA's mission, we prioritize our customers' connectivity and inter-connect needs by fostering an efficient and robust ecosystem as the core of our service. We believe that neutrality – for carriers, clouds, and content – what we call C3 – is critical to developing and nurturing a growing ecosystem where the sum of value delivered is much greater than the individual parts.

Based on customer feedback and our own insights, CENTRA selects strategic markets to locate purpose-built and interconnected data centers that allow for diverse interplay between content and cloud networks, carriers and internet service providers, content distribution networks, enterprises, and other ecosystem partners.

We also have a relentless focus on customer service and seek to customize service delivery to the unique needs of our customers. We remove the cross-connection confusion that drive up cost and waste, and provide a path to customer operational efficiency and financial savings.

Get In Touch

Our customers count on CENTRA as a trusted advisor and partner to profitably grow their digital presence. Contact us to accelerate your own digital journey today.



A 4

B 4

GET IN TOUCH

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