



Beyond the Internet: The era of custom connectivity

A guide to optimizing and future-proofing
your business network infrastructure

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Rethinking the public Internet

Decentralized. Limitless. Open to all.
The Internet has rewritten the future
for almost every business on the planet.

But as digitalization accelerates, it's
becoming increasingly clear that the
public Internet's transformative strengths
are also its weaknesses. Crippling latency,
complexity, and security issues are just
the tip of the iceberg for companies that
rely on it for network infrastructure.

The Internet has brought the world
together, but it wasn't designed to support
the connectivity your business needs
today. Put simply, you can no longer
depend on it to deliver business-critical
data and applications.

The good news is there's an alternative.
That's what this ebook is all about.



Building custom connectivity

An exciting opportunity stands before you. A chance to optimize enterprise connectivity *outside* of the Internet. To build customized connectivity that has all the benefits of the public Internet but can be shaped for your business.

If you seize this opportunity, you can join other pioneering enterprises and enjoy new levels of performance, security, simplicity, and flexibility.

Even more excitingly, implementing a custom connectivity strategy is straightforward, quick to implement, and cost-effective. Once it's in place, you can optimize your infrastructure, enabling you to:

→ Manage limitless cloud-based applications

→ Connect and securely exchange massive volumes of data with any number of partners or suppliers

→ Ensure your business-critical traffic reaches its destination as fast as it should

→ Position your business to survive and thrive in the digital information age

For now, let's rewind a little and explain what this solution is, and how it works.

Interconnection explained

Interconnection is simply a connection between two or more parties to exchange data, and it is critical to today's enterprises. This is because most businesses now rely on platform-based models rather than traditional on-premise systems. They need to assemble solutions using third-party components that share data across ecosystems, and therefore depend on interconnectivity.

By connecting to an Internet Exchange and using its interconnection platform for services such as cloud connectivity and direct network connections, you can isolate your connection from the public Internet to simplify and control your network infrastructure. And you can connect directly and privately with any party. This means you can achieve exceptional performance and prepare your business for whatever tomorrow brings.

The power interconnection gives your business is the exciting part of this story.



The power of interconnection

Before we get into the practical steps of building custom connectivity, let's take a deeper dive into what your business can gain from interconnection services. The four key benefits are:

- Improved performance
- Enhanced security
- Reduced complexity
- Greater flexibility

Improved performance: Slash latency and get closer to your end user



Optimizing connectivity outside of the Internet means you can increase speed and maximize performance by achieving the lowest possible latency.

Latency is the time between a user taking an action and experiencing an application's response to that action. Literally the time it takes for data packets to travel through the Internet to the application and back again.

Imagine you're on a video conference call. Latency is the lag between you speaking and the other people on the call hearing what you say. Clearly the shorter the delay the better the user experience.

The physical location of your applications is vital in reducing latency. *You* don't necessarily need to be physically close to the end user, but applications do if you want a positive user experience. To continue the video conferencing example, participants in Europe will typically experience a lag of at least 65 milliseconds if the video conferencing application is hosted on a server in the US. That might not sound like a lot, but it's more than enough to disrupt the natural flow of conversation.

And in some sectors latency impacts more than just the user experience.

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- Imagine a digital car that sends data to the cloud relating to road conditions and the status of the vehicle. It's critical for physical safety and performance that this data flows as quickly as possible.
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- Or consider a financial trader purchasing stock based on rapidly changing market information. They must be able to place an order and have it carried out as quickly as possible. Any delay could be extremely costly.
-

Emerging technologies that work on real-time response – such as virtual reality or Internet of Things devices – need exceptionally low latency. Reducing the physical distance between application and end user is vital to drive adoption of these technologies.

To illustrate this:

→ For video conferencing or HD live-streaming, applications need to be less than 1,200 km from the user. That equates to a 15 millisecond lag.

→ For e-manufacturing or self-driving cars, applications need to be less than 80km from the user. That equates to a 1 millisecond lag.

A direct connection reduces latency by removing intermediaries and creating the shortest possible path between application and end user. Content and applications should be as close to the users as possible to minimize latency and maximize performance.

We'll explain the nuts and bolts of how that works a little later.

1,200km
15ms

80km
1ms



The remote work imperative

Remote working is now almost universal, so building tailor-made connectivity for your business is taking on a whole new significance.

With a rise in video conferencing, virtual desktops, and cloud-based collaboration, you need fast, secure network performance.

During the pandemic, global infrastructure group Hochtief recognized a need to improve performance for over 3,000 employees using Microsoft 365 at homes, offices and construction sites across the world. It established a dedicated, direct connection to the Microsoft 365 cloud, isolated from the public Internet.

This reduced latency by an impressive 90%, while also boosting security.

[READ HOCHTIEF CASE STUDY →](#)

Enhanced security:

Take control and secure data flows



Maximizing performance isn't the only reason to explore custom-built connectivity. It also allows you to take control of data flows and improve security.

When data travels over the public Internet, the path it takes is not known and can also change frequently. This brings potential security risks, which are different for each vertical. While retailers may be most concerned about financial fraud, those in the health sector might be more worried about controlling unauthorized access to potentially sensitive patient data. Virtually any business can be susceptible to a distributed denial of service (DDoS) attack, where networks are overwhelmed by a flood of Internet traffic, disrupting business operations.

The digital car provides us with a particularly striking example of the importance of network security. With vast volumes of data flowing to and from digital cars, a security breach could have disastrous consequences. The car could be hijacked, technically manipulated, or even weaponized if the pathways along which data flows are not secure.

Bypassing the public Internet enables your business to eliminate security risks and control the pathways of your critical data. You can connect directly and redundantly to the legitimate applications and networks your business needs to function. By removing hops and gaining clarity into data flows, you reduce the potential for security breaches.

Custom-built connectivity also increases resilience and redundancy to minimize network outages. And built-in security has a knock-on positive impact on performance as you don't need to secure every individual connection. With the right provider, your need for security, reliability and performance can even be backed by guaranteed service-level agreements.

Reduced complexity:

Overcome connection confusion

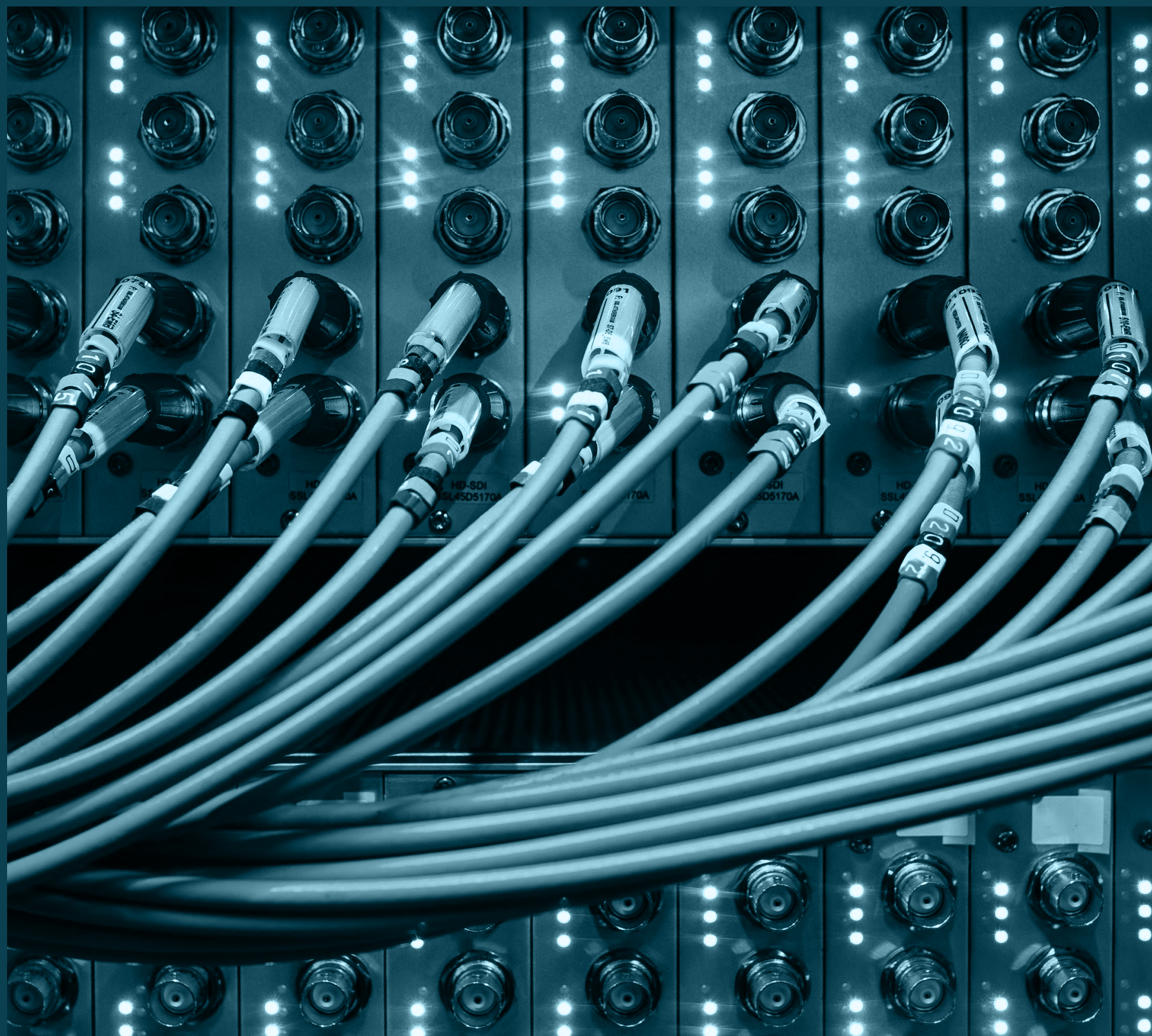


How many systems, applications and data sources does your business currently connect with? Few people know the answer to that question offhand but – depending on the business – it's likely to run into the hundreds if not thousands.

Connecting with each of these entities individually is incredibly complex, resulting in an unmanageable web of bilateral connections and relationships. The fact that so many connections cross national borders and regulatory regions just adds to the confusion as you work to meet different requirements.

When you build customized connectivity outside of the Internet, this complexity simply disappears. By using the efficient principles of one-to-many or many-to-many, and aggregating traffic rather than using multiple bilaterals, you can connect simply and directly in a single, clean environment known as a Closed User Group (CUG).

And the best part? Most of the networks you want to connect with are already set up to do just this. You only need to establish a connection on your side, which is quick, simple, and affordable.



Is your head in the cloud?

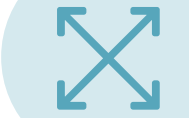
The cloud offers businesses game-changing opportunities. But the sheer volume of cloud service providers can be overwhelming.

Imagine a large global manufacturer that uses around 30 different cloud service providers. This might include the major players such as Amazon Web Services, Google Cloud, IBM Cloud, Microsoft Azure, and Oracle. It might also include a variety of specialist or regional players. In all likelihood this manufacturer is currently managing individual connections with each and every cloud service provider.

By leveraging custom-built connectivity, the manufacturer can dramatically simplify its structure, with a single, secure connection to one Internet Exchange that is already connected to all 30 cloud service providers.

Greater flexibility:

Enjoy agility and scalability to meet future needs



So what might hold you back from building custom connectivity for your business? Perhaps the idea that it could be expensive or time consuming? Or the fear you will be tied into using specific data centers or services?

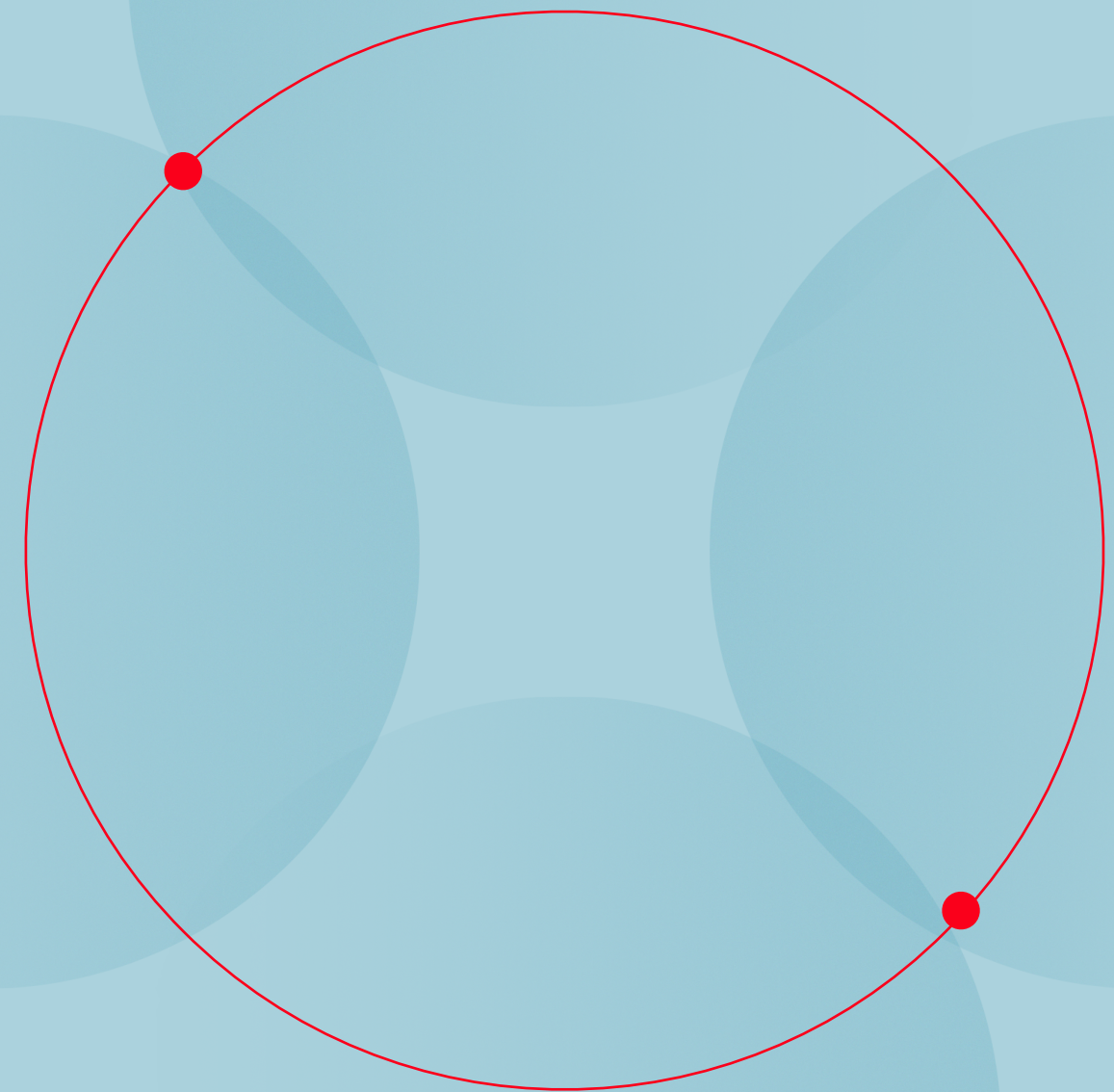
As a business your connectivity needs change continually. One week you may want to connect to Amazon Web Services, the next you may need to connect to the Google Cloud. So you need a solution that is flexible enough to meet your immediate requirements, and also scalable to meet whatever the future holds.

There are neutral and affordable providers you can partner with to optimize connectivity outside of the Internet. It doesn't matter what data centers you use, which networks you want to connect to, or how your interconnection needs change from one day to the next. You can even manage your connections quickly and easily via API or intuitive customer portals.

Are you ready to get started?

Four simple steps to optimal connectivity

Building customized connectivity for your business is far easier than it sounds. These four simple steps are all you need to get started.



STEP ONE:

Connect to an Internet Exchange

An Internet Exchange – also known as an Internet Exchange point – is an interconnection platform that allows different parties to come together and interconnect their technologies. They are a vital part of the Internet we know today.

Internet Exchanges were established to enable data to flow from one network provider to another via a process known as peering, ensuring traffic flows directly between networks, quickly and cost-efficiently.

Originally, Internet Exchanges were used by telecom carriers, ISPs and content networks. But Internet Exchanges have evolved beyond just interconnecting Internet players. They now offer additional services using the same backbone infrastructure, but bypassing the public Internet.

Today, companies from all sectors including automotive, healthcare, finance, and retail are enjoying the benefits of connecting to Internet Exchanges.



Your business can easily connect to an Internet Exchange too. You only need a single connection to take advantage of the interconnection services they provide. Connecting with an Internet Exchange is typically quick and easy:

- Choose the Internet Exchange you want to connect to.
- Choose a data center where you can connect to it. This might be a location you are already using.
- Select an access size according to traffic volumes, to ensure port bandwidth.

Checking out which networks are available at a particular exchange is a key part of the selection process. The chances are the networks you need to interconnect with already participate in these ecosystems so you only need one connection to the Internet Exchange on your side. If you decide to use the DE-CIX exchanges, for instance, it's highly likely the networks you want to connect with are already there. But if not, you can make a request and we will try to make them available



STEP TWO:

Establish peering connections

Once your business has access to an Internet Exchange, you can connect and exchange data directly and securely with hundreds of other networks and partners. This can be achieved by peering publicly – over the Internet – or by using private connections that bypass the Internet. Through this interconnection, you can avoid congested transit routes and transmit your data via the most direct path.

This direct transmission, along with the substantially shorter routes taken by data packets, improves the overall quality of all networks connected to the Internet Exchange, whether they are using public peering or private connections.

Those that use peering have access to a variety of additional security features. These include Blackholing, which protects against DDoS attacks by enabling unwanted data to be captured and dropped from the network.



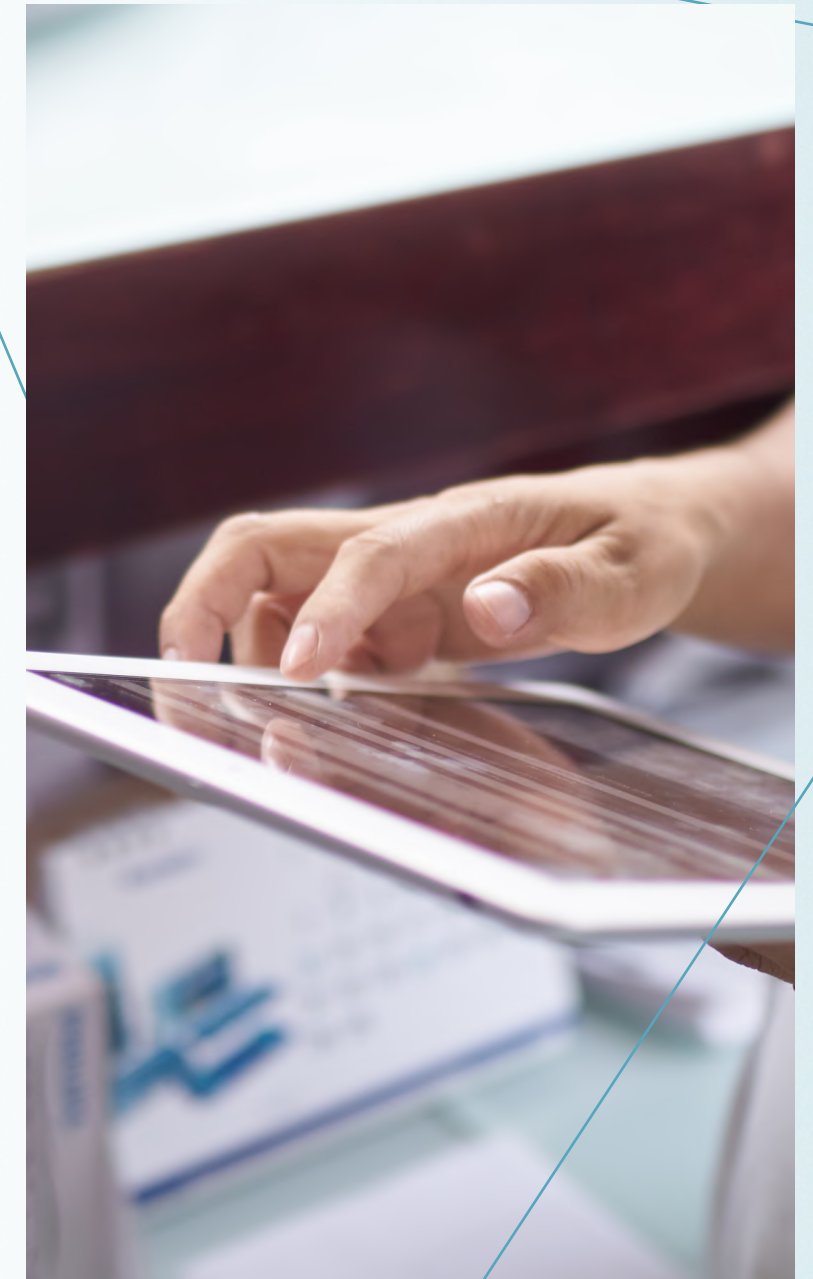
STEP THREE:

Create private cloud connections

Whether you're using the cloud for communication, data storage, application development or something else entirely, you need a continuous connection with minimal downtime. Creating a dedicated connection between your infrastructure and your chosen cloud service providers can deliver precisely that.

You can connect to an Internet Exchange directly, or through your ISP. The Internet Exchange will then extend that connection to your selected cloud service provider, offering a fast, secure, and private connection that bypasses the Internet. You can choose to connect with multiple cloud service providers via a single connection, enabling a hybrid or multi-cloud strategy.

Internet Exchanges provide access to variety of cloud service providers via a simple VLAN connection. For example, there are over 50 to choose from at the DE-CIX cloud exchange. And with the Microsoft Azure Peering Service you can get optimized connectivity to Microsoft's cloud services, including Microsoft 365.



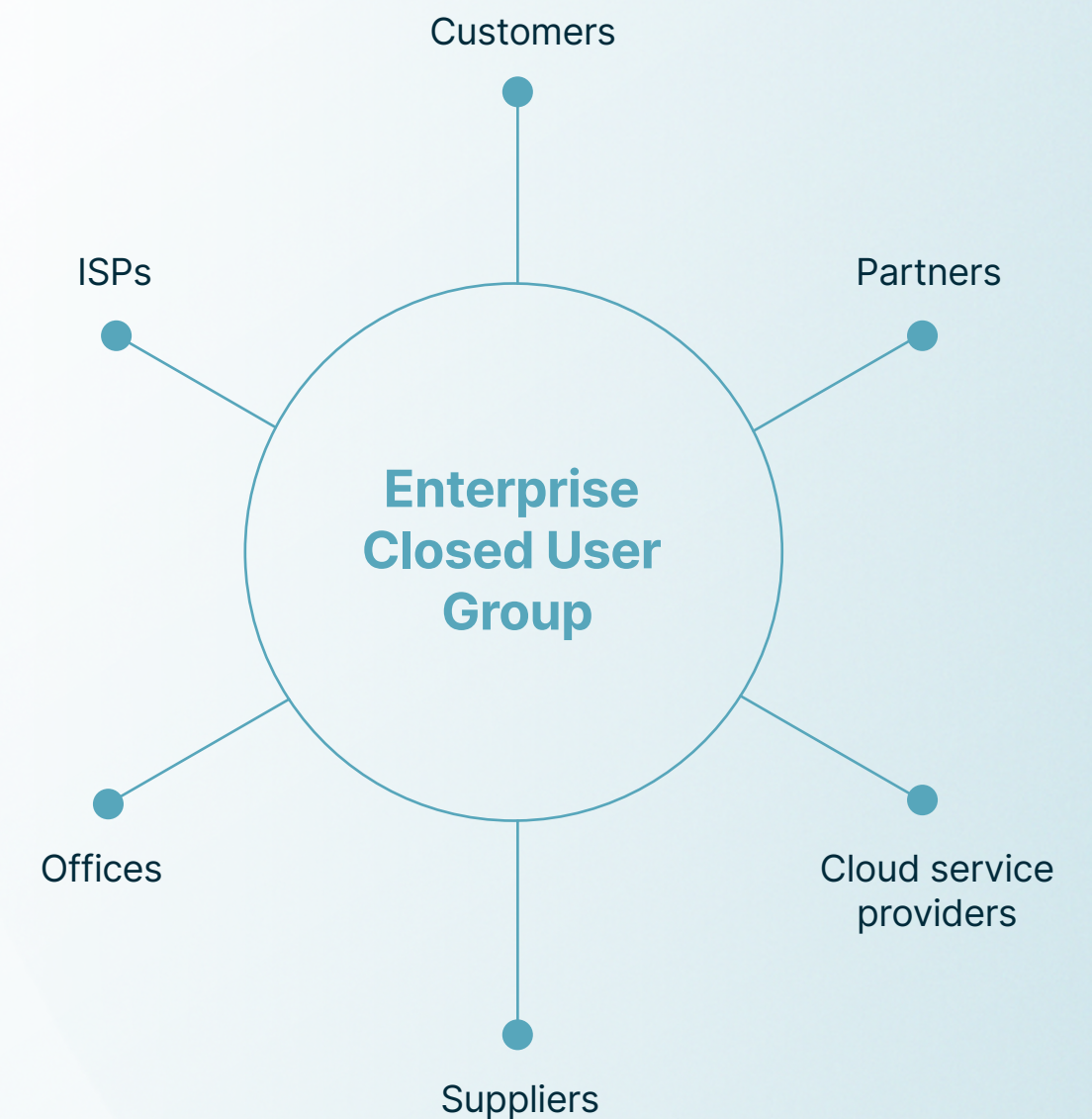
STEP FOUR:

Set up a Closed User Group (CUG)

You can also choose to set up your own interconnection environment – or CUG – set apart from the public Internet infrastructure. A CUG is a secure private ecosystem within the Internet Exchange environment. It bypasses the public Internet but is directly accessible from multiple interconnected data centers.

This setup solves the challenge of interconnecting with other networks within a closed environment, while enjoying the benefits of speed, simplicity, and security.

Using a CUG you can connect with a variety of selected partners to securely and efficiently exchange data according to your own performance, security and compliance policies. A CUG for a healthcare company, for instance, might include hospitals and pharmacies as well as ISPs. And it would have strict policies in place to protect the transfer of sensitive patient data.



Powering ahead with custom connectivity

Directly connecting with networks at an Internet Exchange, combined with private cloud connections and a CUG specifically designed for enterprise interconnection, is as close as you can get to having your “own Internet”.

Using enterprise interconnection services at an Internet Exchange, you can future-proof connectivity and optimize infrastructure for the new digital era. You can take control of the environment in which digital interactions happen in order to maximize performance and flexibility. Meanwhile, you maintain simplicity, stability, and security, regardless of how your interconnection requirements change in the future.

With custom connectivity you can generate value for your business today and position it for innovation and growth tomorrow.

Do you want to see interconnection services in action?

Why not check out our white paper and discover how your business can benefit from a direct, secure, low-latency connection to Microsoft 365, that bypasses the public Internet.

 **DOWNLOAD THE WHITE PAPER**



About DE-CIX

As the leading Internet Exchange operator and interconnection provider, we help companies to realize new opportunities and future-proof their connectivity needs to manage growing data volumes and new applications. From easy and secure cloud connection to creating interconnection ecosystems, we make interconnection easy. Anywhere.

FIND OUT MORE AT [DE-CIX.NET](https://de-cix.net) →

