WHAT DIGITAL LEADERS KNOW ABOUT CLOUD INTERCONNECTIVITY AND ECOSYSTEM DEVELOPMENT

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Introduction

It hardly needs to be repeated that organizations continue to accelerate their shift to digital platforms, or that both employees and enterprise IT have become more dispersed than ever. What does need some attention is how and where companies are developing new digital solutions, and how they are connecting employees, customers, suppliers, and applications in the new hybrid-working, cloud-based technology landscape.

The typical enterprise application connects to between four and eight other applications or services to perform its function, and some rely on many more. As organizations are making increasing use of application and service ecosystems spread across multiple providers to make these links, this intensifies the focus placed on interconnection as a key metric of how suitable service providers are to meeting the needs of a modern, digitally advanced company.

> ## AT A GLANCE
>
> ### WHAT'S IMPORTANT
> The most successful companies are increasingly participating in distributed digital ecosystems that are connected across core to edge to cloud, enabling them to engage effectively across the supply chain, the workforce, partners, and customers.
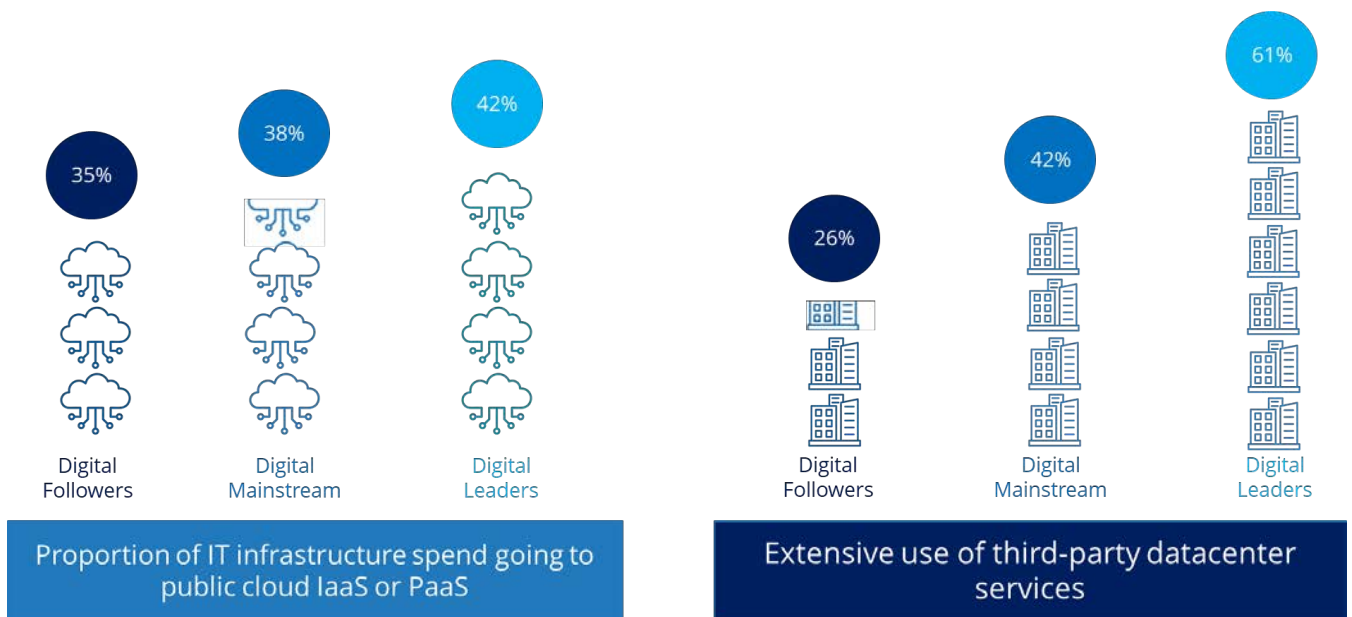>
> ### KEY TAKEAWAYS
> Cloud networking is evolving, from connectivity to the cloud to connectivity within and between clouds, reflecting the shift to digital ecosystems, cloud native, and multicloud. Organizations now need end-to-end networking across disparate interconnected environments.

Today's digital interconnection platforms operate within carrier-neutral colocation facilities (CNFs), based on their extensive carrier and public cloud partnerships and alliances that are built on a combination of scale and strategic investment.

These platforms are complemented by cloud-centric network services that provide access into the platforms while abstracting away the complexity of managing the individual connections that make up a multicloud architecture. This IDC Technology Spotlight introduces BT's Connected Cloud Edge service as an example of the next generation of cloud connectivity designed to provide an easy to use, managed multicloud networking environment.

Market Situation

The 2020s have seen some of the largest and most rapid changes in over a century, forcing people and organizations to quickly adapt. Many companies have been forced to rip up their technology investment plans and implement many years' worth of digital transformation into a matter of months.

As part of this, IT has had to undergo an accelerated change as businesses have transitioned from a highly centralized campus model to one where applications and users are highly distributed and disaggregated and where engagements with customers, suppliers, and partners are predominantly digital.

In turn, this is putting fundamentally new pressures on how we provide connectivity to enable linked applications and service chains to perform together to the level that the business needs, and to enable employees, partners, and customers to connect to services wherever and whenever they need.

IDC research shows that Digital Leaders — the top 25% of companies that view IT as a strategic enabler for their business and that invest most heavily in advanced cloud-native digital infrastructure — are the ones that are flexible and agile enough to adapt to these changing conditions. As a result, these are also the organizations that can readily capture more of a market or pivot to new ones to grow their revenues and be successful in the market.

A key area that helps Digital Leaders achieve this heightened flexibility and agility is a willingness to work with an ecosystem of third-party suppliers, partners, and service providers. In doing this, Digital Leaders position themselves to build and deliver applications or IT services across the supply chain, the workforce, partners, and customers, rather than trying to build and operate these internally. The upshot of this is that the most digitally transformed organizations make significantly more use of external parties than the overall market to help deliver their advanced IT services — whether this is using public cloud services, running infrastructure in colocation facilities, or having managed service providers help run IT on premises.

FIGURE 1

Digital Leaders Are Embracing Third-Party Services to Accelerate Transformation

Proportion of IT infrastructure spend going to public cloud IaaS or PaaS	Extensive use of third-party datacenter services

Source: *IDC European Infrastructure Survey 2021*, n = 925

The typical enterprise application connects to between four and eight other applications or services to perform its function. The adoption of first public cloud and, increasingly, hybrid multicloud architectures has the inevitable impact that managing end-to-end connectivity between an ecosystem of applications running in a variety of locations and from different service providers is proving to be critical to a successful experience.

Successful digital transformation therefore requires all ecosystem participants to be easily, simply, and securely interconnected. This in turn requires a network that can perform to the same level as the server and storage infrastructure the application is running on, with scalable bandwidth, ultra-low latency, and predictable performance combined with manageability and security.

A chain is only as strong as its weakest link, as the saying goes, which highlights why the network is so critical to the overall experience and performance of the public cloud. For the ecosystem approach to deliver, interconnectivity should be broadly available and consistent across all locations or environments where workloads need to be deployed, from core to edge to cloud. In addition to being high performing, the network also needs to be pervasive, able to optimally connect elements together wherever they may be, across on-premises datacenters, third-party datacenter services, or the public cloud. To achieve this, leading connectivity solution providers will have had to invest significantly to provide the range of network adjacencies necessary to link these distributed elements together.

A key part of the value proposition will be strategic partnerships enabled by CNFs, thus providing easy access to digital ecosystems. This will result in co-engineered offerings that customers can immediately benefit from, without expensive and time-consuming integration efforts.

The increasing adoption of ecosystems of applications and services spread across multiple providers is leading to a new, heightened focus on interconnection as a key metric on how suitable network services providers are to meeting the needs of a modern, digitally advanced company.

Getting to Grips with Cloud Interconnectivity

Spending on private IT infrastructure remains the biggest proportion of IT infrastructure spend at around 60%, and it will continue to remain the biggest area of spend for the foreseeable future. However, IDC's *2021 European Infrastructure Survey* shows that around four in five companies have embraced a hybrid cloud strategy, where the preference is for using public cloud services (to a greater or lesser extent) alongside existing private IT infrastructure. This approach is quite consistent across the spectrum of companies, from Digital Followers to Digital Leaders.

As organizations adopt hybrid cloud more extensively, there is a risk that the existing estate of applications deployed on private infrastructure could be increasingly isolated from the broader ecosystem of applications and services across public cloud or other environments, unless positive action is taken to include them in any interconnectivity strategy.

Looking more to the future, when it comes to more advanced approaches to cloud, such as adopting multicloud, things begin to diverge. With multicloud, applications or services fall across multiple cloud domains. They rely implicitly on connecting to each other to exchange data and information to perform their functions. Digital Leaders — the top quarter of companies that are the most digitally transformed — have moved quickly to embrace multicloud, with around three-quarters having adopted this approach extensively.

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In the Digital Mainstream — the middle half of organizations with IT that is on the way to being transformed — extensive adoption of multicloud is far less established, running at just over a quarter of companies. Looking toward future developments, these companies that are looking to become more competitive will need a comprehensive multicloud strategy, and the connectivity implications that this brings.

Organizations are increasingly adopting more public cloud and multicloud services to deliver applications and services. The question many are grappling with is how to best go about joining up the various infrastructure elements at scale to enable this, and who will take responsibility to connect, secure, manage, optimize, and evolve all the different parts.

One approach to solving integrated multicloud interconnectivity is to try and adapt existing IT architectures to the new reality. This means running existing systems in private on-premises datacenters, and trying to implement enhanced WAN connectivity at these sites to enable applications to connect to the complete range of external cloud services across multiple providers, while simultaneously enabling the workforce, partners, and customers to access any applications that are running in these datacenters.

While this may work for some companies, they will be in the minority due to the skills, time, and investment required, coupled with a lack of experience. The reality is that there is such a change across application deployments and user access patterns that new approaches are increasingly needed.

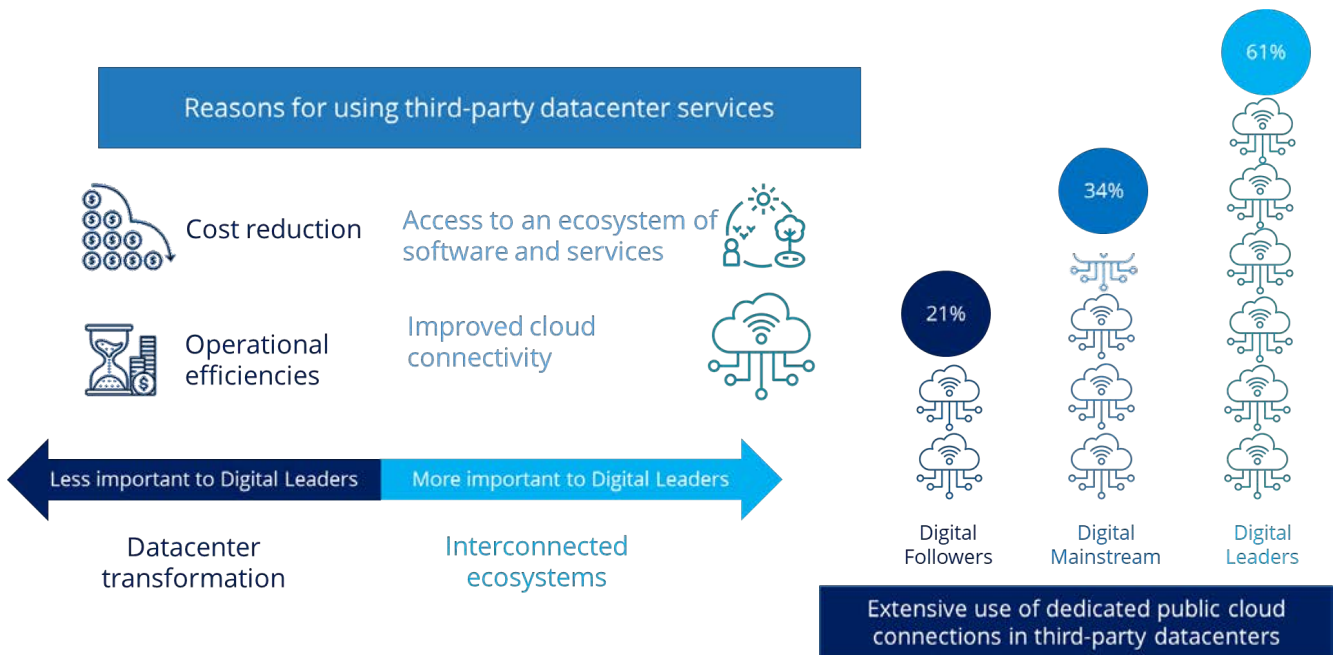## Interconnectivity Drives Digital Leaders' Datacenter Strategy

One such change is to rethink how applications and services delivered from private IT (everything outside the public cloud) should be deployed. Here again a lesson from the most advanced Digital Leaders can help steer us in the direction of a successful approach.

We saw in Figure 1 that Digital Leaders, in addition to spending proportionately more on public cloud services and adopting multicloud extensively, also make far more extensive use of third-party datacenter facilities to house their infrastructure and to help deliver IT services more effectively.

When it comes to using third-party datacenter facilities, organizations that are less digitally advanced tend to buy more tactically, on price, power, and space.

But if we look at how the view of Digital Leaders differs from the consensus, what we see emerge is a more demanding set of requirements for interconnect-driven datacenter services that focuses on enabling seamless access to an ecosystem of software and services across private IT and public cloud.

FIGURE 2

Digital Leaders Are Moving Beyond Datacenter Transformation to Interconnected Ecosystems

Source: *IDC European Infrastructure Survey 2021*, n = 925

As a direct result, Digital Leaders value the improved cloud connectivity that leading interconnect-driven datacenter providers can offer through their range of carrier and public cloud alliances that are built on a combination of scale and strategic investment that few, if any, enterprises could justify investing in on their own. As a result, almost two-thirds of Digital Leaders have readily embraced the use of public cloud accessed from within interconnected datacenters, compared to only a third of Digital Mainstream companies and a fifth of Digital Followers.

The key lesson that most organizations can take from the Digital Leaders is that we are in a world where applications are increasingly distributed across private IT, colocation, or several public cloud providers. At the same time they can be accessed from anywhere, on any device, and at any time. Making greater use of interconnect-driven datacenter services for their enhanced ecosystems and connectivity capabilities rather than just their power, space, and cooling can help build and deliver a competitive advantage.

This is all well and good, but there is a significant number of public cloud services, and a ton of choice of connectivity providers. If it takes significant time and investment to evaluate, select, and then get all the different elements integrated and working together, then the bar to realizing value may be too high for most companies.

It's Time to Let Experts Handle the Integrated Delivery of Complicated Platforms

One of the fundamental shifts in IT that has come with the rise of public cloud adoption is the shift toward having the underlying IT infrastructure delivered as a service, initially as infrastructure as a service (IaaS) and increasingly as platform as a service (PaaS). This shift in the

public cloud has helped organizations to start shifting their thinking around their own private IT infrastructure. It is increasingly changing from focusing on designing, building, and running their own complex IT infrastructure themselves, to looking for a partner to deliver this for them as part of a service.

In the past, this was largely achieved with dedicated managed services or with outsourcing providers. This has been evolving and new flexible consumption models have emerged, enabling companies to have a managed hardware platform provided "as a service," to deploy their required mix of apps and services. This takes away much of the complexity of building and running IT and has a number of benefits to both IT and the business:

- It delivers upfront transformation while preserving cash for investment in innovation
- It frees up IT staff to focus on activities that add value to the business
- It enables investment in scarce skills to be spread across many different customers
- It enables IT to transition to an as-a-service model

Digital Leaders are again showing the way, with 52% using flexible consumption models to fund more than 30% of their IT infrastructure, compared with 36% of Digital Mainstream and 25% of Digital Followers.

When it comes to connectivity services, with such complex ecosystem considerations and integration across multicloud, not just any connectivity provider will do. With the right partner, you can choose from a range of solutions, from physical deployments that offer consistency, predictability, and scale to virtual solutions focusing on agility and flexibility to speed time to value. What's needed to pull it all together is a partner with high levels of capability and investments in automation and orchestration to help integrate and harmonize interconnectivity across the ecosystems and its participants.

The Need for an End-to-End Managed Connectivity Service

The chronology of these developments over the years is clear: colocation arose in the late 1990s (as a way to offload datacenter ownership and to place web-facing resources close to major internet hubs), public cloud in the mid-2000s (as a virtualized, usage-based form of colocation and storage), and software-defined networking in the mid-2010s.

What has been less clear has been a vision of how to bring all of these elements, notably including network, together in a way that lets enterprises connect users, hybrid IT, cloud workloads, and third-party cloud resources together in a relatively painless way.

Organizations that source and integrate all the components themselves, particularly in increasingly standard multicloud or ecosystem-centric environments, tend to be quickly challenged by complexity, overhead, and cost. The process also ties up valuable skills that could be better deployed developing new services on top of the infrastructure, rather than building and operating the infrastructure itself.

A pre-provisioned, pre-integrated, cloud-native connectivity service could provide programmable, usage-based access to the interconnection fabric provider, within an end-to-end managed network footprint across and between clouds. This would remove a significant barrier for organizations looking to commit more deeply to a cloud-native approach in their roles as producers and consumers of IT, and it would reduce the need for organizations to hire scarce skills that lie outside their core business.

Such a service would also accelerate industry trends such as Manufacturing 4.0 and enable new technologies such as AI, AR/VR, blockchain, IoT, and robotics as enterprises develop new applications and solutions across manufacturing, retail, life sciences, and other industries. While *IDC's EMEA Emerging Tech Survey 2021* found that a lack of adequate IT infrastructure is one of the top barriers to adopting new technologies, it also revealed that for over 50% of companies, scalable and manageable connectivity is a must-have to enable that adoption. As these new technologies typically rely on interconnection to cloud resources, and are increasingly data intensive and real time, access to a performant connectivity service will become essential to a growing proportion of enterprises.

Cloud networking has evolved since the first iteration of services that offered a dedicated virtual circuit from customer equipment into a cloud provider. The shift from connectivity to the cloud, to connectivity within and between clouds, reflects the shift in companies' IT and development practices over the past few years toward digital ecosystems, cloud native, and multicloud, as well as the shift to hybrid working as a result of COVID. In their transition to the new IT, organizations face many obstacles, and getting to grips with end-to-end networking across disparate, heavily interconnected environments is one of the most challenging. Service providers are now starting to address that challenge.

Connected Cloud Edge Profile

Introduction

The shift of IT to the cloud and the growth of cloud-native solutions are driving connectivity requirements beyond traditional WAN-to-cloud services. Enterprise networks need to be integrated more tightly into the platforms that connect ecosystems of cloud and technology providers to achieve the performance, scale, flexibility, security, and cost management needed to support accelerated digital transformation.

Connected Cloud Edge is BT's next-generation cloud connectivity service designed to support agile IT across multicloud environments globally. To create the service, BT is extending its network into strategic CNFs and connecting to the CNFs' interconnection fabric. Once organizations are on BT's network they can access a wide range of cloud providers and other technology partners via CNF interconnection hubs globally, on-net, without having to provision individual connections to those providers.

BT has partnered with Equinix to launch Connected Cloud Edge, taking advantage of Equinix's leading position in global footprint and number of connected partners. The rollout program

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initially includes 13 globally dispersed locations and will expand to new locations in response to customer requirements.

By pre-integrating BT's network with Equinix's fabric and providing it to enterprises as a fully managed service, Connected Cloud Edge removes the complexity of sourcing and managing individual connections into cloud providers and helps ease management of and data flows within multicloud environments.

Adding value to the multicloud routing services, additional capabilities such as SD-WAN and firewall will be made available, augmenting services already available from BT. With these functions in place, organizations can create innovative, flexible overlay solutions across the interconnected estate, driving the role of the Connected Edge as the hub of next-generation networks.

Challenges

Connected Cloud Edge aims to enable ecosystem and multicloud networking while minimizing complexity for the customer. As the number of connected partners and use cases expand, the complexity involved in ensuring consistent, interoperable experiences behind the scenes also grows, particularly across components that are not directly owned. BT, like other service providers, creates value by managing this complexity, and it needs to ensure it can continue to do so while keeping the customer interface and consumption models simple.

As Digital Leaders have found, making cloud work well requires constant reimagining of the technical and operational architectures their businesses run on. This means that enterprises and service providers building for this new world must bring together network and IT, creating a shared vision, best practices, and thought leadership. The Connected Cloud Edge service spans these domains and should play a part in addressing the challenges faced, but organizations should recognize that this is no easy task.

Conclusions

Organizations' digital transformation has accelerated in the past two years and the dispersal of employees and applications has added to the need for IT to adapt quickly to sudden changes. Cloud is increasingly the default option, and so flexible, performant cloud networking is becoming an essential component of a modern digital enterprise.

The behavior of Digital Leaders bears this out: they are more likely to use cloud-native solutions, more likely to develop services using technology ecosystems, and so work with a wider range of external partners. As a result they use cloud connectivity within CNF sites much more than other companies to access their cloud and ecosystem platforms.

BT's Connected Cloud Edge is an example of the next generation of cloud connectivity, in terms of its architectural design, ability to orchestrate networks across multicloud environments, and its cloud-like commercials.

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As you develop your own organization's cloud strategy and road map, consider the following:

- Most organizations will move over time toward developing applications and solutions as cloud native, drawing on capabilities from within technology ecosystems. If you are one of these, how will you ensure reliable, performant, secure, and consistent access to the needed platforms?
- How easy is it to source and retain the expertise and experience you need to build and manage complex multicloud networking environments?
- If you are transitioning parts of your network from MPLS to SD-WAN, what potential opportunities does that create for integrating more closely with cloud platforms?
- Are you now prioritizing how your IT infrastructure becomes agile and flexible to adapt to changing requirements quickly and cost-effectively? Review where the applications and services you use are located and consider moving them closer to your edge and your users. Might it be simpler to access more of these locations on-net using a CNF interconnection platform?

MESSAGE FROM THE SPONSOR

BT's Connected Cloud Edge service lets you bring a vast array of cloud service providers, partners, suppliers, and customers on-net with your existing BT network. By providing access to cloud fabric ecosystems it enables Digital Followers to achieve the benefits of ubiquitous, on-demand, and automated "cloud as a service" that Digital Leaders already enjoy. BT developed the service, using Equinix infrastructure, to provide lower risk deployments and consistency wherever you operate.

Connected Cloud Edge enables you to address the complex challenges that come with hybrid and multicloud networking. It offers users of the service the flexibility to build and evolve solutions as they transition from datacenter to cloud-centric architectures. Integration with BT's networking and security portfolio also means you have unrivalled access to a set of managed services against which you can build the most demanding of solutions on a global basis.

About the Analysts

Andrew Buss, Research Director, European Enterprise Infrastructure

Andrew Buss is responsible for driving IDC's research covering trends impacting servers, storage and networking, and IT service delivery. Central to this is understanding how on-premises IT is evolving with the emergence of open source, software-defined enterprise, multicloud adoption, and cloud-native development practices, and how this will impact everything from low-level silicon underpinnings and system design, to design and integration of the different infrastructure components, to platform management and service delivery.

James Eibisch, Research Director, European Enterprise Communications

James Eibisch analyzes telcos' enterprise communications and IT services, telco positioning and transformation, and the use of emerging technologies such as AI and quantum networking by network providers. He covered the carrier-neutral colocation, cloud, and hosting markets for many years, advising leading players on market strategies and the dynamics between the IT and networking worlds.

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