

# Exploring The Potential Of Cloud Connectivity In Africa

An in-depth analysis of how organisations can redefine potential through the dynamic capabilities of the public cloud.



Liquid Cloud White Paper  
March 2022



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## Introduction: The value of connectivity

A well-defined cloud connectivity strategy is critical to the long-term growth and sustainability of any enterprise looking to explore the potential of the cloud. Every cloud strategy needs a cloud connectivity strategy as one of its foundational pillars as it is critical to its success both in the long and the short term. Connectivity is the key – it is connectivity that needs to drive the decisions the organisation makes with regards to how it will invest, integrate and innovate in the cloud.

Cloud allows the organisation to accelerate across region and industry, to become increasingly agile and competitive, and to adapt on demand. It improves speed to market, innovation, and operational excellence. It is laden with benefits and statistics that prove its efficacy and potential. Yet without connectivity that is both reliable and agile, cloud cannot even begin to achieve this potential. To build a truly robust cloud solution, connectivity has to be the leading priority.

## Cloud Benefits

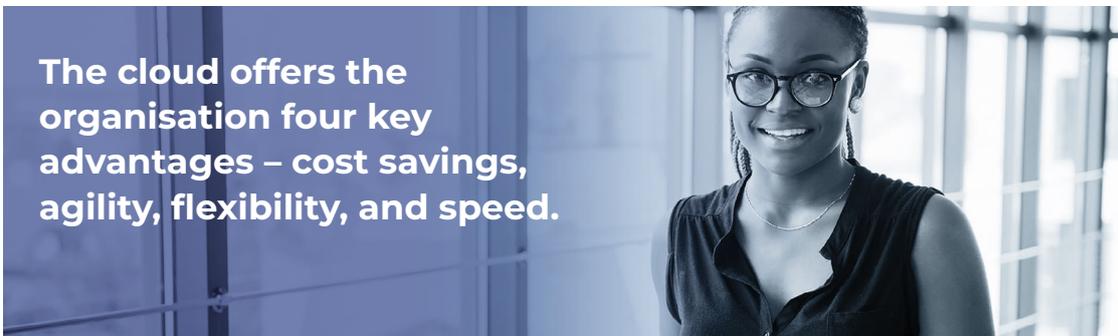
Cloud has become the technology platform from which organisations can leverage improved customer engagement, deeper budgetary control and more intelligent data-driven decision making. The benefits of cloud are tangible and relevant, proven by in-depth research from market-leading organisations and case studies that reflect how a correctly implemented cloud strategy can deliver a clear return-on-investment (ROI) and strategic advantage.

“As many have experienced firsthand, the pandemic has pushed more businesses to adopt wider use of cloud computing technology. A new survey finds it’s also driving more companies to deploy a hybrid (mix of on-premises and one or more public clouds) or multi-cloud (multiple public clouds) approach. The survey, conducted by The Harris Poll and sponsored by Microsoft, found 86% of all respondents plan to increase investment in hybrid or multicloud environments, and 95% say those technologies have already been critical to their success.” - **Erin Chappelle, Corporate VP Azure, Core PM & Design, Microsoft, 2022**

The cloud offers the organisation four key advantages – cost savings, agility, flexibility, and speed. Investment in a robust and relevant cloud infrastructure allows for the organisation to spread its costs, balancing consumption against need. This is one of the leading priorities for most organisations according to the RightScale 2019 State of the Cloud Report<sup>2</sup> - 84% of companies highlighted this as a key challenge for the year ahead while 64% are set to optimise cloud spend and existing cloud infrastructure to leverage its cost potential.

Cloud gives the organisation the ability to spread costs closer to consumption – it can pay for what it uses and bypass a hefty hardware investment in the process.





The increased agility and flexibility provided by the cloud is tied to the concept of consumption on demand. The business can scale up or down, dependent on this exact idea, balancing customer need and expectation against application and system. Cloud bypasses the weighty, lumbering limitations of on-premise solutions with expensive CAPEX costs by introducing OPEX-powered platforms and demand-driven investment. Of course, connected to both cost and agility, is speed. This is a critical component of a strategic cloud investment and for business success in increasingly competitive markets.

Organisations are under pressure to build more, faster. To deliver better, yesterday. Cloud allows for the business to develop applications at speed using a wide toolset. It provides immediate access to emergent technologies such as artificial intelligence (AI), machine learning, Internet of Things (IoT), and automation and it opens up sandboxes and spaces within which DevOps teams can work, fail and succeed on an iterative, high-speed basis.

Finally, cloud presents users with myriad offerings and solutions that address the security challenge. Amidst cloud investment and customer demand lies governance, risk and compliance (GRC) and the legislative complexities of acts such as the Protection of Personal Information Act (POPIA<sup>4</sup>) in South Africa and General Data Protection Regulation (GDPR<sup>5</sup>) in Europe.

The price tag attached to a data breach has been publicised extensively over the years, but the most recent figures released by Accenture<sup>3</sup> estimate that it will exceed \$US5 trillion by 2023. Alongside the cost, there are reputational and productivity losses that few organisations are willing to risk. Cloud brings with it a plethora of solutions that evolve on demand and provide the business with latest in technology and toolsets to offset the cyber-threat.

Yet few organisations realise that to truly retain the benefits on offer from the cloud, connectivity must be a critical part of the strategic game plan. Connectivity must underpin investment, focus and realism; access to connectivity that's fast, available, scalable and has an embedded failsafe.

This whitepaper sets out to address some of the leading myths and misconceptions that surround connecting the enterprise to the cloud, allowing for executives and enterprises to make more informed decisions when it comes to long-term, strategic cloud investment.

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- 1 Enterprise Cloud Computing Unlocks Deep Strategic Value Through Increased Business Agility: High Adopters Reap More Benefits. [Accenture](#).
  - 2 Rightscale 2019 State of the [Cloud Report](#).
  - 3 Reinventing the Internet to Secure the Digital Economy. [Accenture](#).
  - 4 Protection of Personal Information Act ([POPIA](#))
  - 5 General Data Protection Regulation ([GDPR](#)).





## The true value of the Connected Cloud

### Delivering on the promise, off-premise. The statistics that define the cloud:

1. 79% of organisations recognise that the cloud delivers cost savings, increased efficiencies and the ability to enable new technologies<sup>1</sup>
2. Cloud drives innovation with 32% of organisations increasing market share and 36% reducing time to market<sup>1</sup>
3. Cloud reduces security concerns with more than 50% of organisations investing into cloud because of its improved security<sup>1</sup>
4. Organisations are increasingly turning to partners to fill skill gaps, manage cloud deployment and enhance cloud investment to minimise risk and maximise efficiency

For many organisations there remain concerns around cloud investment. One of the most common is, of course, power. The fluctuations and unreliability of the power grid shake the confidence of the enterprise looking to leverage the always-on potential of the cloud to run critical systems. This is further compounded by misconceptions around how connecting to the cloud works and fear that surrounds moving something that is in hand and visible into a space that is neither visible nor directly within the organisation's control.

## The Connectivity Conundrum

Organisations are concerned about connectivity issues around peering, exchange points, traffic, control, reliability, and dedicated capacity. They believe that the challenges that limit capacity, ability, speed and productivity mostly hang from the critical hook of connectivity. They also believe that finding and embedding this elusive connectivity is a complex web of technicality and tools that they don't really want to manage or deploy. It's also not true.

Connectivity has become the flash mob for cloud it's quick, adaptable, and everywhere at once. Providers have invested time and money into building connectivity infrastructure that's designed to transform any cloud investment.

The infrastructure investment selected by the organisation will directly influence the results. Many companies believe that the public cloud is too risky, the private cloud too costly, and the hybrid too complex. This is not so much a misconception as a misdirection – the truth lies somewhere in between. There are practical differences in how the organisation can connect to the cloud and these will directly influence issues such as peering, exchange points, reliability and capacity.

Public cloud solutions from leading providers such as Microsoft Azure, Google and Amazon Web Services (AWS) have evolved to the point where their capacity and capability redefine those aforementioned concepts. That said, the location of the service provider's data centre does influence performance and speed. Google has yet to bring their data centres to Africa while Microsoft, Oracle and AWS have already established theirs on the continent. Private cloud solutions allow for deeper control over internal systems, and hybrid cloud solutions blend a mix of public and private to create robust infrastructures and workloads that meet specific requirements around latency, company policy or compliance.

Many organisations believe that connecting to the cloud is as simple as choosing the service provider and clicking on the right button. It is, but it also isn't. There is a fundamental difference in performance and capacity between living in the datacentre or living on the internet and the solution must connect seamlessly to ensure always-on functionality. Unfortunately, the 'click here and go' option that lives on the internet is the cheapest and often the default standard for connectivity.

It also perpetuates the misconception that cloud is unreliable, patchy and beholden to the whims of power providers. This type of solution is rarely optimised for the cloud, factoring in the security, redundancy and resiliency required for seamless cloud deployment.

Standard connectivity can be upgraded to tiering through a public exchange that allows for the organisation to connect to a public peering point. This does improve the experience somewhat as the connection is closer to the service provider. If the business ensures that their service provider is also peering at the same point, then traffic can be exchanged directly, which will further reduce lag and improve performance. The challenge is that there is rarely a Service Level Agreement (SLA) in place as this is a public peering point, allowing access to anyone.

The business doesn't receive redundancy, security and, ultimately, this type of connectivity is still just another way of connecting to the internet. To bypass these challenges, the organisation can opt into direct peering which allows for direct control over capacity management and service provider engagement. However, this expects far more administration from the organisation and still delivers less than optimal connectivity yield.

Then there is the myth that claims a combination of all these connectivity options is the best possible choice for the enterprise. It is packed full of redundancies and loops and fail safes and it allows for extensive routing capacity. Or does it? The reality is a web of connectivity pathways that rarely deliver on their promised performance while significantly increasing admin, costs and complexity.

"A lot of people believe that they can simply connect to peering points such as NAPAfrica or Teraco and then 'boom' they are connected to Microsoft Azure. This is not quite true, neither is the belief that connecting to public peering means that the business doesn't need an ExpressRoute or that it is a back-up to an ExpressRoute. A back-up to an ExpressRoute is just another ExpressRoute."

- **David Behr**, CEO Liquid Cloud and Cyber Security.

## Connecting the African Cloud

Organisations can connect to the cloud through resilient, meshed networks that deliver reliable connectivity and security. The misconceptions of collapsible connectivity and ongoing cost and complexity can be easily dispelled using the right technology and service provider platform.

When it comes to the public cloud, Microsoft Azure has set itself up as a leader on the African continent thanks to the development of not one, but two Azure cloud datacentres in South Africa. The availability of Microsoft's Azure regions in South Africa, plus the use of local Microsoft Azure deployments by partners such as Liquid Intelligent Technologies (Liquid), a business of Cassava Technologies, allows for enterprises to access high-speed connectivity through public and hybrid cloud solutions. Now, the organisation can physically reside in the datacentre and receive dedicated capacity, high resiliency and redundancy, and the added benefits of SLA-driven back-end and security.



Microsoft Azure brought the cloud to Africa, giving it an African home, an address and a presence.

Customers can connect to the cloud using either a public or private dedicated connectivity. Options available are included in the table below:

Internet Connectivity	Dedicated Connectivity
Public Internet	MPLS IPVPN
Public internet with additional dedicated bandwidth for cloud	Ethernet
	Colocation
	SD WAN

We will unpack these options and explain the pros and cons of each so that you are able to make the most suitable cloud connectivity solution for your requirements.

#### Connecting to the cloud via public internet

Possibly the cheapest way of connecting to the cloud is where you trade off pricing over performance and security. Public internet routes are dynamic and shared, which can result in congestion at times resulting in packet loss and increased latency.

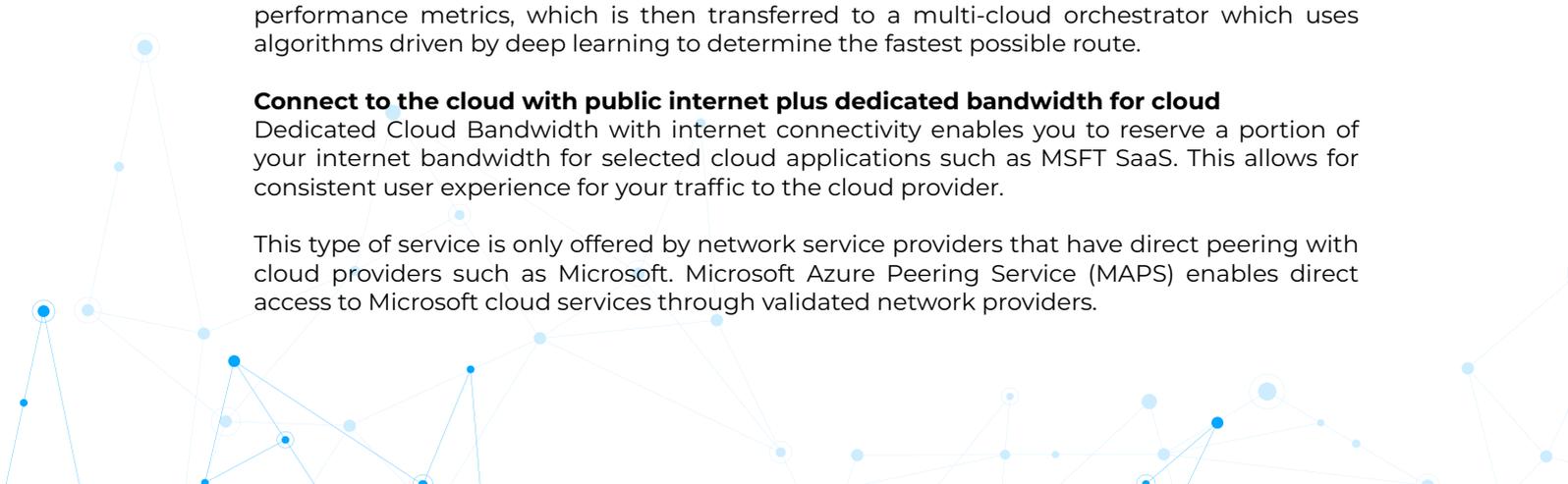
Advantages	Disadvantages
Cost-effective for low and medium data transfer volumes for example a low-speed connection to the internet may be in Kilobits per second and medium sub 10 Megabits per second	Shared and dynamic routes with no performance optimisation or guaranteed performance
Best for non-critical applications	Best effort service
	Not cost-effective for higher data transfer due to higher egress charges

Through its partnership with Teridion, Liquid now offers CloudBoost, an offering that is positioned to drastically improve internet performance to and in the cloud. CloudBoost is built on a Virtual Backbone Network that has a global footprint and is hosted in over 25 public cloud infrastructure platforms. Thousands of sensors collect information around real-time performance metrics, which is then transferred to a multi-cloud orchestrator which uses algorithms driven by deep learning to determine the fastest possible route.

#### Connect to the cloud with public internet plus dedicated bandwidth for cloud

Dedicated Cloud Bandwidth with internet connectivity enables you to reserve a portion of your internet bandwidth for selected cloud applications such as MSFT SaaS. This allows for consistent user experience for your traffic to the cloud provider.

This type of service is only offered by network service providers that have direct peering with cloud providers such as Microsoft. Microsoft Azure Peering Service (MAPS) enables direct access to Microsoft cloud services through validated network providers.



Liquid has direct interconnection infrastructure with Microsoft in South Africa, Kenya, Nigeria and London. Through this partnership Liquid can offer unique cloud centric connectivity products within the African continent.

- **SaaS Connect** is a product that offers Microsoft routes to a customer's premises. We extend Microsoft learnt routes from ASN 8075 to your premises.
- **Liquid CloudInternet** bundles the Internet, MAPS and SaaS Connect, guaranteeing unaffected general browsing to the internet, enabling cloud prioritisation for Microsoft Teams, M365, Azure or any other Microsoft SaaS applications. This ensures that traffic destined to these services takes the best possible path with lowest possible latency in the Microsoft Global network.

Advantages	Disadvantages
Add-on service to Liquid Internet	Limited to service provider peering partners
Consistent and guaranteed SLA-back performance to the closest peering point	
Bandwidth reserved for Microsoft traffic only	
Works for incoming and outgoing bandwidth	
Avoids network contention and unpredictable routing changes	
Shortest path to the cloud network edge	

#### Dedicated Private Connectivity to the cloud

It can be argued that IPSec on a stable, cloud prioritised internet service is sufficient to address your cloud connectivity needs but there are cases where dedicated direct connectivity like Microsoft Azure ExpressRoute is not only worthwhile but essential for greater performance, security, predictability, and cost savings.

#### Security and Risk Mitigation

Even if we employ encryption techniques over the internet, the attack surface is just too infinite. According to a recent Identity Theft Resource Centre report, data breaches were up by 38% in Q2 2021. Using private connectivity that bypasses the public internet, allows enterprises to circumvent risks and improve control over security policies around sensitive information and workloads.

#### Predictable service with cost control

Direct connections with Service Level Agreements (SLA's) provides predictable service parameters such as latency and jitter which is paramount to certain sensitive applications. Cost savings can be realised by a lower exit charges on private connections levied by the hyperscalers.

One of the most dynamic methods of connecting to the Microsoft Azure platform is through the Liquid CloudConnect product developed by Liquid. It connects to specific clouds – Microsoft, Google, AWS and Oracle – through a dedicated express route directly to the service provider infrastructure. For Microsoft Azure, this allows for the organisation to privately connect to Microsoft's infrastructure to access Azure resources directly. For organisations who want to embed an extensive cloud connectivity infrastructure, this solution delivers dedicated capacity within Azure.





“Liquid Intelligent Technologies has availability of Microsoft Azure across its pan-African network that extends over 100,000km and stretches via direct terrestrial, high-speed fibre links across the continent. This ensures customers receive cloud-optimised connectivity with low latency, high capacity and resiliency and they can access hybrid cloud solutions that reside on the African continent. We offer a single, unified solution for any Microsoft Azure strategy that is underpinned by an unrivalled fibre network, strategically located data centres and a hybrid cloud architecture that covers Azure, the Azure Stack and an ExpressRoute connection.”

- **David Behr**, CEO Liquid Cloud and Cyber Security.

The peering and connectivity capabilities offered by Microsoft Azure are unmatched on the African continent. It is seamless, simple, reliable and flexible, and it negates many of the complexities and misconceptions that affect cloud adoption and investment.

The elastic cloud model provided by Liquid allows for rapid, on-demand scaling for increased business agility and ongoing innovation. It ensures that customers retain control over the scale of their operations and their costs within a reliable network. Microsoft has developed reserved instances over time that allow for organisations to manage expenditure as they move from the CAPEX to the OPEX model, allowing them to lift and shift within budget. The cost of moving to the cloud is often seen as an expensive initial investment but few organisations compare this initial cost to their ongoing on-premise charges of back-up, database administration, power and manpower. The expenses incurred can be further reduced when the cloud is built – addressing peak load with servers using spot instances and peak on demand services, only buying capacity when it is needed.

### **Liquid has the Edge**

There is no doubt that we are heading closer to the Edge. According to a [Frost and Sullivan](#) report, 90% of industrial enterprises will utilise edge computing by 2022.

IoT and new 5G applications, AI and ultra-low latency applications or products will be enabled by edge computing. Enterprises will receive improved application performance, quicker data processing and increased efficiency. As part of the roadmap, Liquid's agile network will support high capacity and extremely low latency, customers will also be provided the option to scale connectivity and bandwidth based on their requirements into these new edge locations.



Before embarking on the cloud journey, select a partner that can help you pick the right service provider, the right connectivity options, and the right solutions for your cloud strategy. This will allow you to assess immediate workloads, what will work over the long term and where the cost savings will lie. A deeper understanding of these factors will directly influence how you spec infrastructure, the selection of public versus hybrid versus private cloud, the service provider and the platform. It will also ensure that any compliance or security regulations around POPIA or GDPR or legislation are addressed at point of departure.

“We understand that the actual cloud migration requires a lot of planning to ensure that existing applications work, that the connectivity works, and that the migration doesn't impact the business. There are practical and realistic issues that must be addressed. As clients move from on-prem to the cloud, traffic and patterns can change dramatically, upgrades may be triggered, resources may need to be re-assessed. To realise the benefits of cloud, you need a partner that has already embedded itself in cloud connectivity optimisation and formed partnerships that allow seamless service delivery.”  
- **Winston Ritson**, Chief Business Development Officer at Liquid Cloud and Cyber Security.

## The Cassava Technologies Difference

Liquid provides direct connectivity to the cloud on a highly resilient, meshed network that delivers a reliable connection to the world's most secure cloud environment. As one of only three South African providers with a direct Microsoft Azure connection, we sit at the forefront of the African Cloud revolution. Through Africa Data Centres, a business of Cassava Technologies, we have expansive reach, innovative digital services, and detailed SLAs. Our partners are among the most highly respected and recognised in the world and include Microsoft, Netsurit and Omega, among others.

Liquid Cloud understands exactly how to create cloud solutions that deliver what your business needs. From public to private to hybrid, we have the partnerships and capabilities required to craft a cloud connectivity platform that bypasses the challenges and fast tracks the benefits.

We have a suite of connectivity products and services that connect you to strategically located data centres and offer unrivalled cloud solutions. This bouquet of products and services ensure exceptional cloud experiences and rich, evolving connectivity solutions. We run Azure Stack, a hybrid cloud platform that offers a subset of the services available on Azure, to provide you with your own reliable and secure cloud production environment. Our solutions are agile and effective, and our teams work closely with customers to ensure that our cloud is reliable, smooth, dedicated and fast.

Born and built on the African continent, we understand the unique challenges that impact businesses on the continent. Our solutions aren't affected by random power outages, are driven by the need to deliver ongoing excellence, and are constantly expanding to ensure that local business has the best in class cloud connectivity.





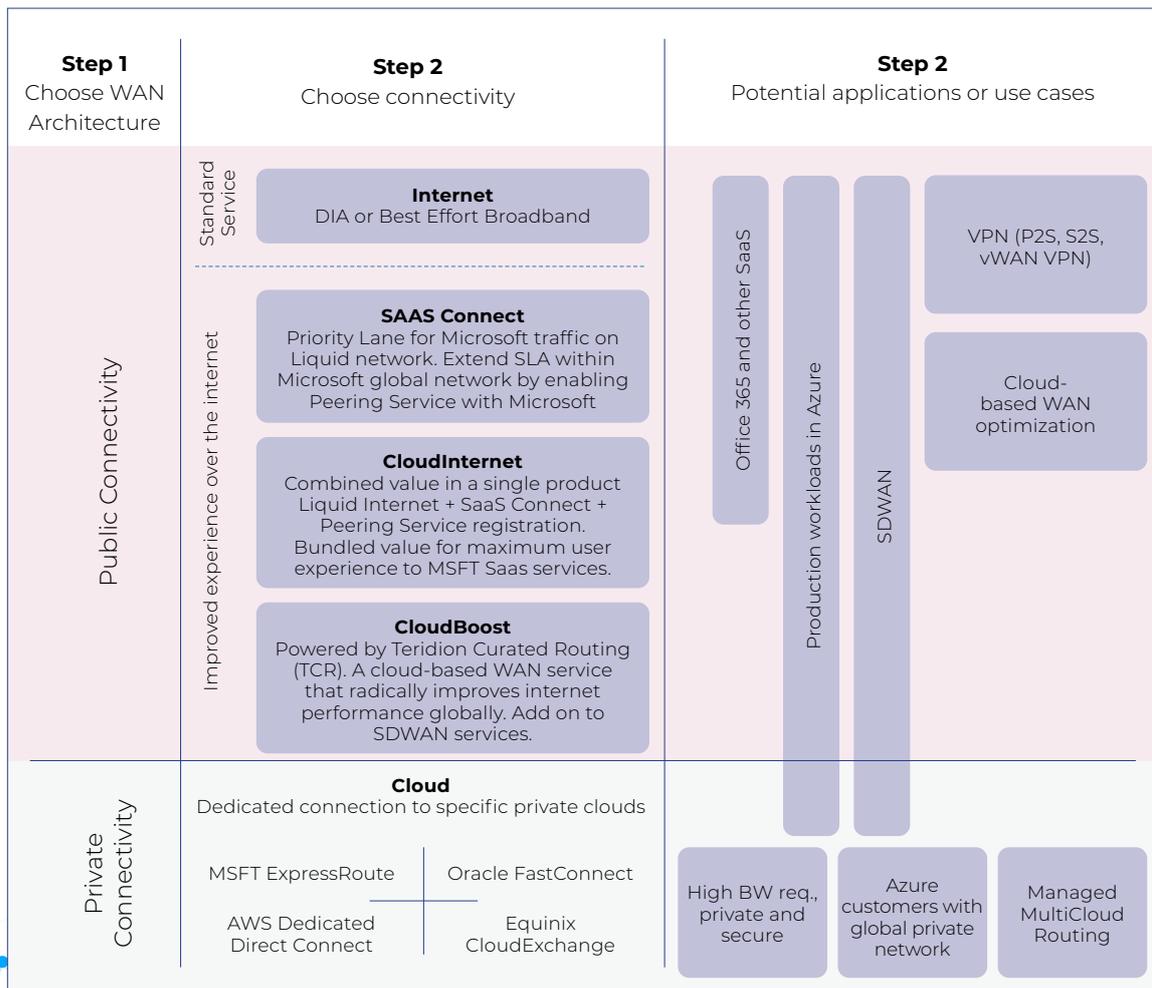
## Liquid CloudConnect

CloudConnect for Microsoft ExpressRoute will enable you to create private connections between Azure data centres and infrastructure on your premises or in a colocation environment, resulting in greater reliability, faster speeds, lower latencies and higher security than standard connections through the public internet.

Liquid is enabling CloudConnect ports at over 1000 Points of Presence (PoPs) across Africa to support Microsoft Azure, and is also making major upgrades to Liquid data centres in Johannesburg and Cape Town to meet the needs of global cloud players and enterprise customers. As an official Microsoft Cloud Solution Provider, Liquid can provide cloud services and products to Africa, such as Microsoft Azure, Microsoft Dynamics 365, Microsoft 365, Microsoft Office 365, Enterprise Mobility Suite and Windows 10.

## Liquid Cloud Connectivity Product set

### Cloud Connectivity Choices



## Glossary of Acronyms

<b>AWS</b>	<b>Amazon Web Services</b>
<b>GDPR</b>	<b>General Data Protection Regulation</b>
<b>GRC</b>	<b>Governance, Risk and Compliance</b>
<b>POPIA</b>	<b>Protection of Personal Information Act</b>
<b>ROI</b>	<b>Return on Investment</b>
<b>SLA</b>	<b>Service Level Agreement</b>



To find out more about what Liquid Intelligent Technologies can do for your business, visit us at

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