

Embrace digital
transformation with scalable
and secure cloud-based
network services

Secure Access Service Edge
(SASE) Point of view

Telecom Engineering Centre of Excellence (TEE)

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Introduction

Enterprises journey from on-prem connectivity and security infra to cloud-based services

The good news is that technology advancements and trends are re-shaping connectivity services, providing a much-needed help for this exponential requirements boom. Approaches and as-a-service models that combine software-defined networking capabilities with cloud-based network security functions are now being adopted by the industry and will see a massification in the near-future.

Heavy on-prem network devices and applications are no longer able to match enterprises demands for scalability, flexibility and security. Businesses digital transformations drive this fast-paced desires, characterized by increased security exposures as well as a swelling operational complexity.

In order to support enterprises engaging in an appropriate network evolution journey, Deloitte provides through this paper a detailed view of a cloud-based network & security framework (SASE), its main benefits and potential approaches to be considered for different business profiles.

Hence, enterprises can no longer afford to lose sight of their core businesses to maintain a dense physical network landscape that keeps requiring huge investments on assets and people just to keep in line with minimal performance and security requirements.

New world, new challenges, new drivers

The new digital and hyperconnected world is driving organizations towards a swift technology-based transformation, requiring the adoption of innovative approaches to sustain the pace

New enterprises' challenges

Disruptive technologies' adoption

The increasing **adoption of new disruptive technologies**, like Internet of Things (IoT) and Artificial Intelligence (AI) **challenge organisations to innovate constantly** and to undertake periodic exercises on how to compete to gain direction

Source: Deloitte

Technology investment returns

Return on Investment (ROI) from technologies **dependent on physical assets are low** due to high capital expenditures and long time to go-live. "The **cloud-based solutions are delivering 4 times the ROI** of on-premises solutions and deploying 2.5 times quicker"

Source: Forbes

Global competitiveness

Although globalisation can offer **growth**, it also creates new challenges due to **increased competition**, mainly on the technology foundations, since digital knowledge is key for the digital economy

Source: Forbes

Connectivity & security

Any digital transformation must have connectivity and security foundations as a basis. According to Gartner, worldwide **spending in information security** is forecasted to **grow 12.4%** in 2021, mainly **due to strong demand for software-as-a-service solutions**

Source: Gartner

New business drivers



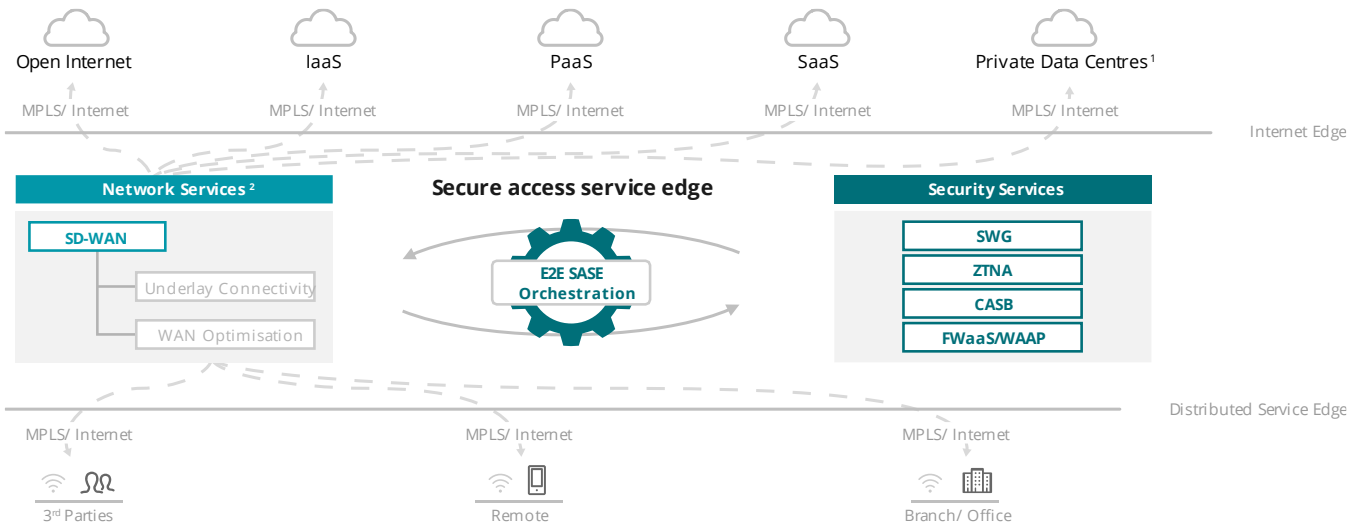
The scene is clearly set and the **shift to a new network services delivery model**, leveraging the latest cloud-based technology advancements, **can be considered a non-regretful and much needed move**

A new model for connectivity & security services

The Secure Access Service Edge (SASE) is a framework that uses cloud-based network and security concepts to deliver more simplified, integrated and secure connectivity services to the organisation

SASE is a cloud-based security architecture framework coined by Gartner in 2019

It combines **software-defined networking** with **network security** functions that are delivered through **cloud as-a-service models**, generating a set of **capabilities** that address **technological and business needs**



SD-WAN - Software Defined - Wide Area Network; **ZTNA** - Zero Trust Network Access; **CASB** - Cloud Access Security Broker; **FWaaS/WAAP** - Firewall as a service / Web Advanced API protection

Source: Gartner

1 On-premises, collocated and hosted Data Centres

2 Since SASE converges software-defined networking and focuses on connectivity to the WAN, the main network service of this architecture is SD-WAN. This function also includes underlay connectivity and WAN optimisation components relevant to the SASE architecture.

SASE does not entail a radical change to network & security capabilities. Existing security and network technology deployments are already shaping organisations' path towards SASE

There is no SASE silver bullet, single vendor or product. However, the current lack of standards limits interoperability across a multi-vendor landscape while increasing integration complexity

Key numbers of SASE adoption in the market show that organisations will increasingly embrace SASE in the near-future

92%

of IT organisations' have already started their cloud migration journey

Source: 2020 Cloud Computing Study

42%

of expected CAGR of SASE market between 2019 to 2024, targeting an \$11 billion cap

Source: Gartner

60%

of enterprises plan to adopt SASE-based services until 2025

Source: Gartner

The main SASE framework components

SASE framework can be structured in a set of components that support the delivery of advanced software-defined network and security capabilities optimised by an E2E orchestration functionality

Network services

Software Defined - Wide Area Network (SD-WAN)

- SD-WAN is a technology that uses **software to manage enterprise WAN connections**, leveraging the virtualisation concept to create **different overlays in accordance with business traffic and links**
- Provides network connectivity between **distributed enterprise locations and resources** (SaaS, IaaS, PaaS) hosted in private and public data centres

Underlay connectivity

- The SD-WAN platform allows enterprises to **use any combination of underlay connectivity services** such as MPLS, Internet (e.g. dedicated internet access) or Mobile (e.g. 5G) to **interconnect network locations**
- This capability enables enterprises to select **the most efficient connectivity method for transporting traffic** while reducing costs and simplifying management

Wide Area Network (WAN) Optimisation

- WAN optimisation focuses on **maximising the efficiency of data transfer across the WAN** between different locations, namely data centres, branch offices and cloud
- Applies mechanisms to **enhance services performance**, such as TCP acceleration, network memory, compression techniques and network integrity with Forward Error Correction (FEC)

Security services

Secure Web Gateway (SWG)

- SWG is a centralised solution that **filters unwanted software/malware** from ingress/egress Internet traffic
- These gateways **enforce corporate/ regulatory policy compliance** to control user access and public & private cloud-based applications traffic

Cloud Access Security Broker (CASB)

- CASB solutions identify **unsanctioned applications and unauthorised user behaviour**, increasing visibility and control on secure cloud apps & data
- This broker consolidates multiple **types of security policy enforcement** — regardless of what sort of device is attempting to access it

Zero Trust Network Access (ZTNA)

- ZTNA services aim to replace the traditional IP based remote access models for dynamic user/app/device **identity centric software-defined perimeters**
- ZTNA ends up creating logical-access boundaries around business applications, **restricting and securing on-premises and cloud access**

Firewall as a service (FWaaS) & Web Advanced API protection (WAAP)

- FWaaS and WAAP are cloud-based services that **enhance other SASE components** focused on protecting applications within the cloud environment
- FWaaS provides **cloud-based firewall capabilities** and WAAP **protects public/ internal web applications** by providing signature-based protection

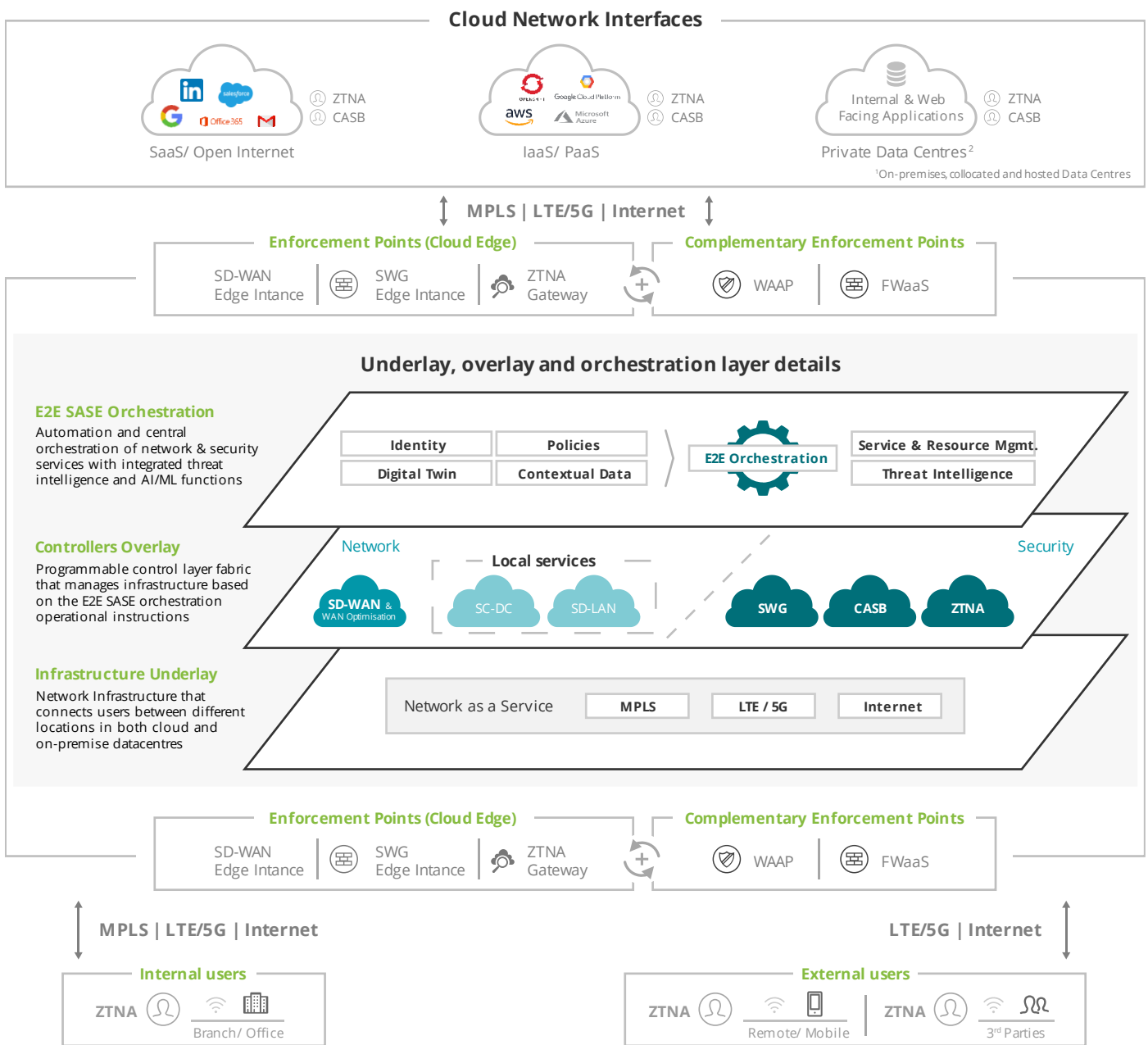
E2E SASE Orchestration

- SASE Orchestration, Automation and Response (SASE-OAR) **automates security and network** workflows functions
- **Reduces operational complexity** and ensures that operations **comply with access privileges and policies** through an optimised network path
- **Integrates with SIEM, NOC, SOC and AI analytics tools** to perform continuous monitoring and automated incident response

Enterprises do not need to fully adopt all these components to adhere to the SASE Framework. Instead, they should define which architecture components and phased implementation approach best serve their needs

What could be the target E2E SASE architecture?

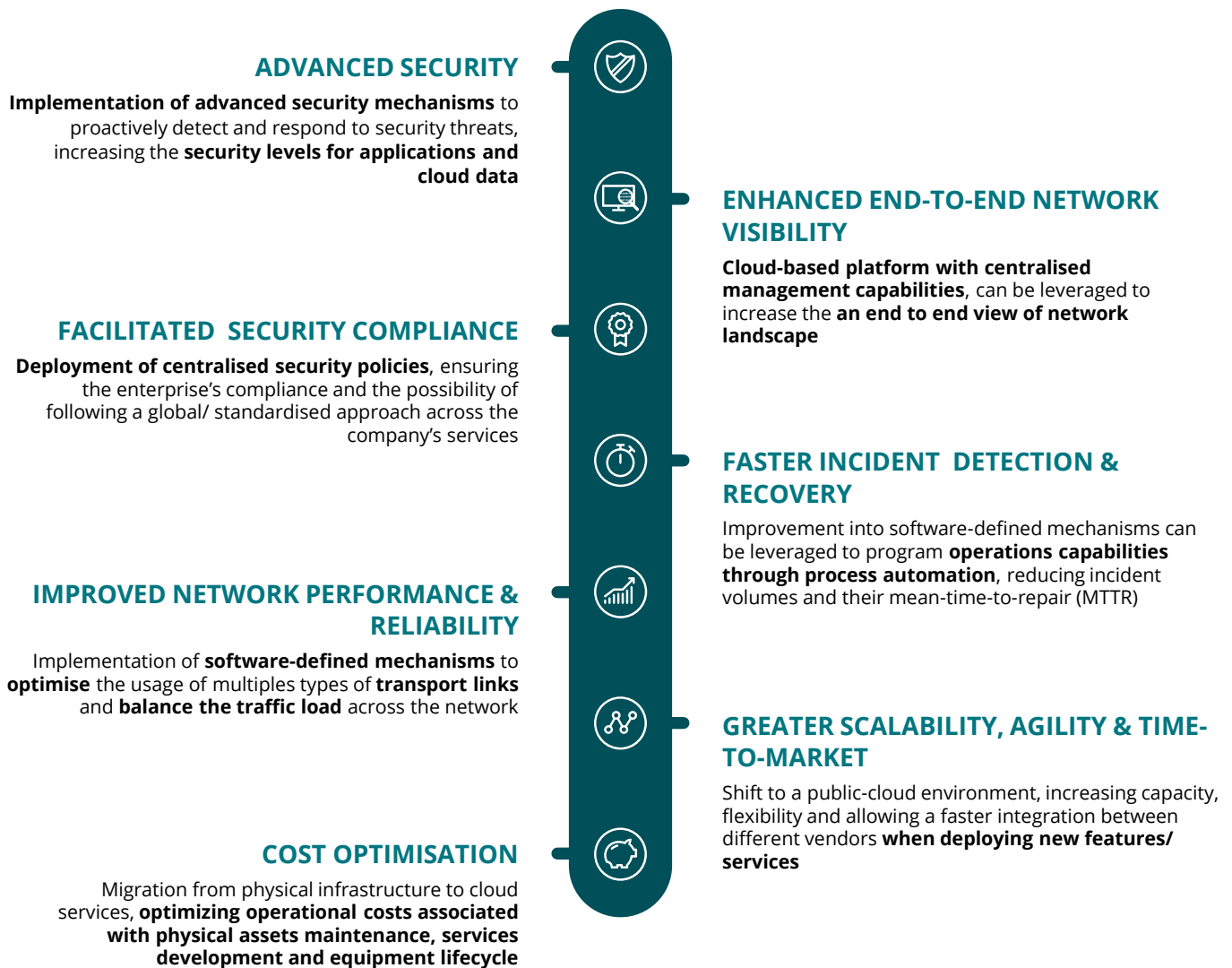
SASE components can be structured into three layers (underlay, overlay and orchestration) which integrate network & security services and operations functions into different abstraction levels



This architecture represents **Deloitte's HL target vision** on how the SASE components can be conceptually integrated. **Organisations should start by defining their own target state** and gradually evolve towards it

What are the main advantages of a SASE framework?

The adoption of a SASE framework provides essential technical and functional benefits that will support organisations addressing the typical business challenges & drivers of this new era



You cannot achieve all at once! A SASE transformation journey, should be planned by prioritizing the unlock of the benefits that will bring more impact for the business

The journey towards SASE is not the same for everyone

Depending on typical business drivers and infrastructure landscapes, it is possible to group enterprises into three generic profiles, each one leading to different challenges and starting points

INDUSTRIAL BUSINESS

e.g, Manufacturing , Oil, Gas & Chemicals



MULTI-CHANNEL BUSINESS

e.g, Financial Services, Retail, Transportation, Wholesale & Distribution



DIGITAL DRIVEN BUSINESS

e.g, Telecom, Media & Entertainment



Some enterprises might identify with more than one of these profiles.

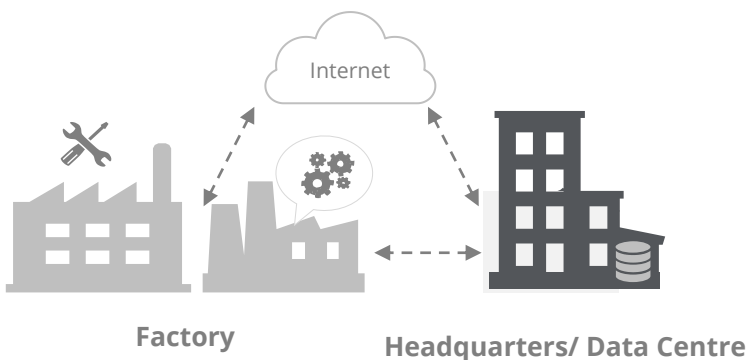
Therefore, at the start of the journey, it is critical to perform a strategic analysis on what does SASE means for the organization's specific context.

The journey towards SASE is not the same for everyone

INDUSTRIAL BUSINESS

e.g, Manufacturing , Oil, Gas & Chemicals

Business Profile



Manufacturing player that heavily relies on-premise machinery/ systems with a limited digital maturity and cloud infrastructure. High resistance to infrastructure transformations due to legacy dependencies

Features



Low digital implementation



Reduced cloud infrastructure



Significant intranet footprint



More resistance to infrastructure transformations



Challenges

- On-prem to cloud migration effort (costs + timelines)
- Lack of cloud expertise within the organisation



Starting points

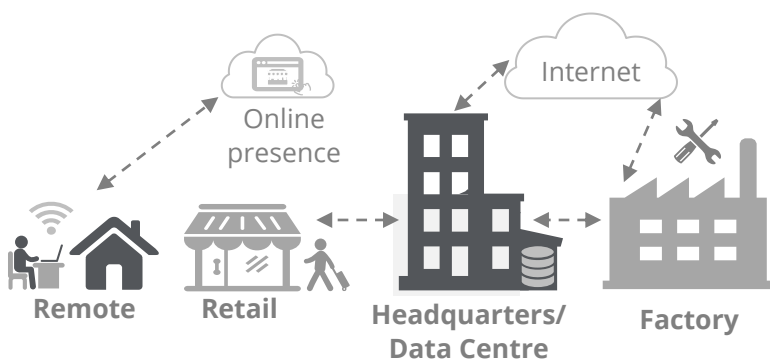
- **Accelerate cloud migration strategy for on-prem assets with embedded SASE principles**
- **Off-set private DCs as network hubs and move users out of the perimeters**, i.e. expand internet breakouts
- Use of **hybrid WAN** (Internet and MPLS lines) and **SD-WAN** to reach cloud services with increased performance

The journey towards SASE is not the same for everyone

MULTI-CHANNEL BUSINESS

e.g, Financial Services, Retail, Transportation, Wholesale & Distribution

Business Profile



Hybrid player that depends on both on-premise and cloud infrastructures, having a significant focus on digital transformation, which normally results on an increasingly public-cloud footprint

Features



Digital approaches already at the core of the business



Significant cloud adoption



Balanced intranet vs internet landscape



Still reliant on legacy and on-prem appliances



Challenges

- Lack of alignment between IT, infra and cybersecurity teams
- Tools & processes standardisation across on-prem and public-cloud



Starting points

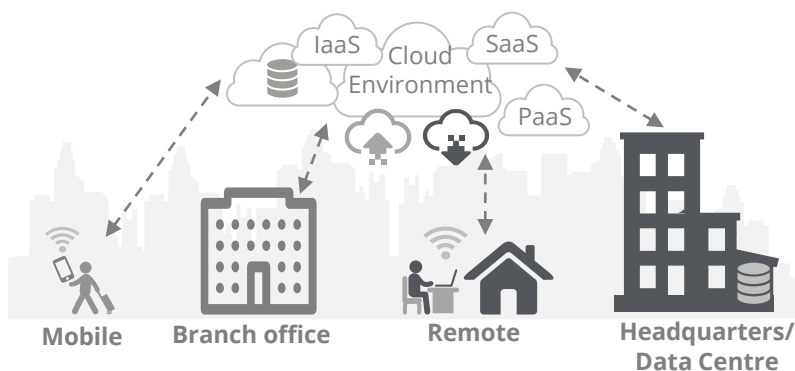
- **Off-set private DCs as network hubs and move users out of the perimeters**, i.e. expand internet breakouts
- **Virtualise network infra, secure web inbound data with SWGs and replace VPNs with ZTNA solution**
- Shift from location-based to **identity-based access**

The journey towards SASE is not the same for everyone

DIGITAL DRIVEN BUSINESS

e.g, Telecom, Media & Entertainment

Business Profile



Platform / software player that relies on a digital driven business with infrastructure mainly hosted in the public-cloud and/or treating public and private clouds similarly. Easily scalable with reduced dependency of on-premises assets

Features



Digital core business



Private & public clouds treated similarly



Low intranet dependencies



More scalable and flexible infra footprint



Challenges

- Integration of multi-vendor and multi-solution approaches
- Exposure to cyber attacks and business disruptions

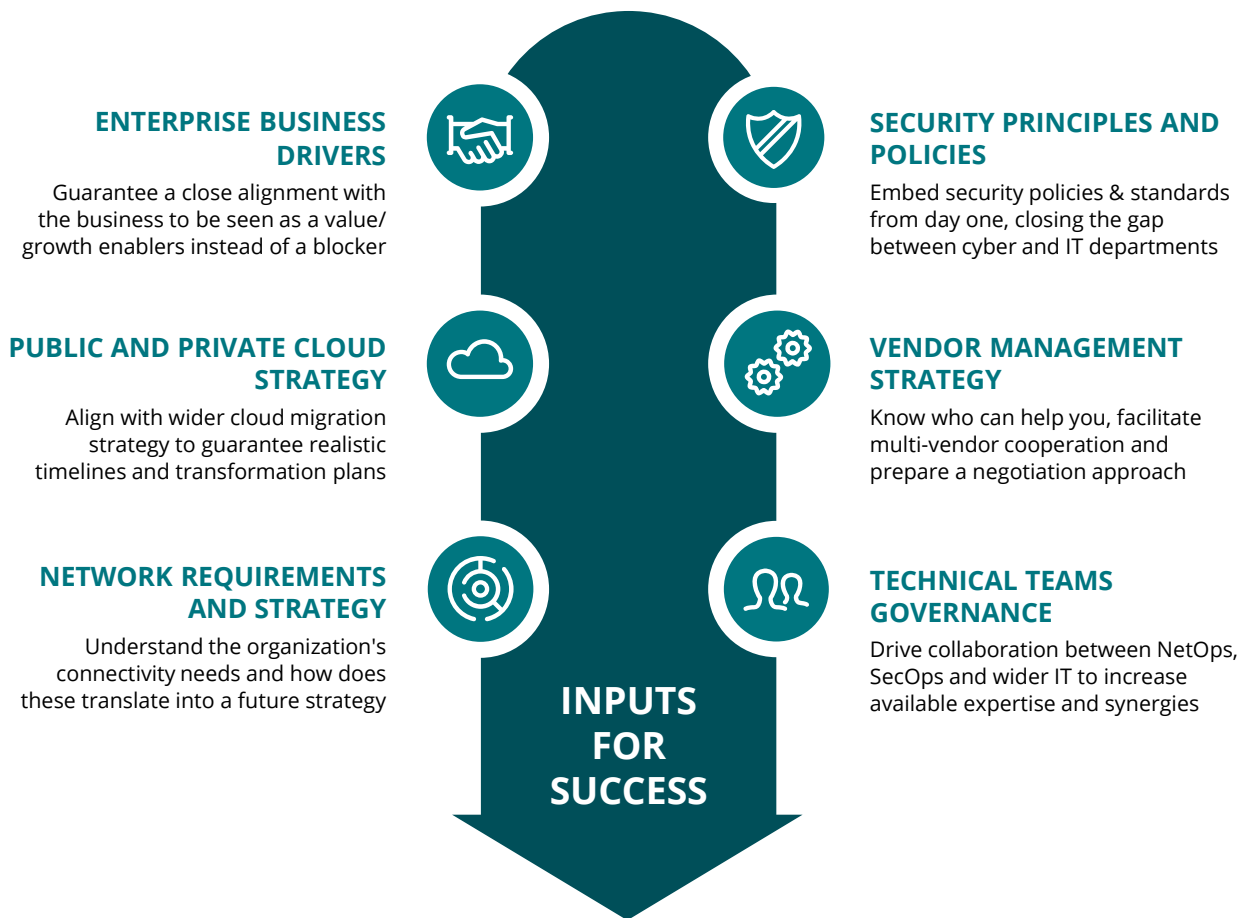


Starting points

- Adoption of a full **internet-based WAN**
- **Phase out all legacy network VPN** for remote access
- **Expand cloud Automation and Orchestration capabilities** across every network domain
- **Increase cloud infra protection with advanced threat mechanisms**

Success factors of a SASE implementation

A successful SASE implementation starts by a close alignment with business goals and wider organisation strategic initiatives, such as, cloud migration, cyber security policies and IT strategy plans



Maintain an aligned vision from all perspectives

SASE touches more than a single domain. Hence, it is critical to **keep an aligned vision from all perspectives and angles:** Financial, People, Technology and Operations

Planning is everything, plans are nothing

It is important to plan the journey but also to understand that changes will be necessary along the way. **Be agile: markets change fast and business drivers need to follow suit even faster**

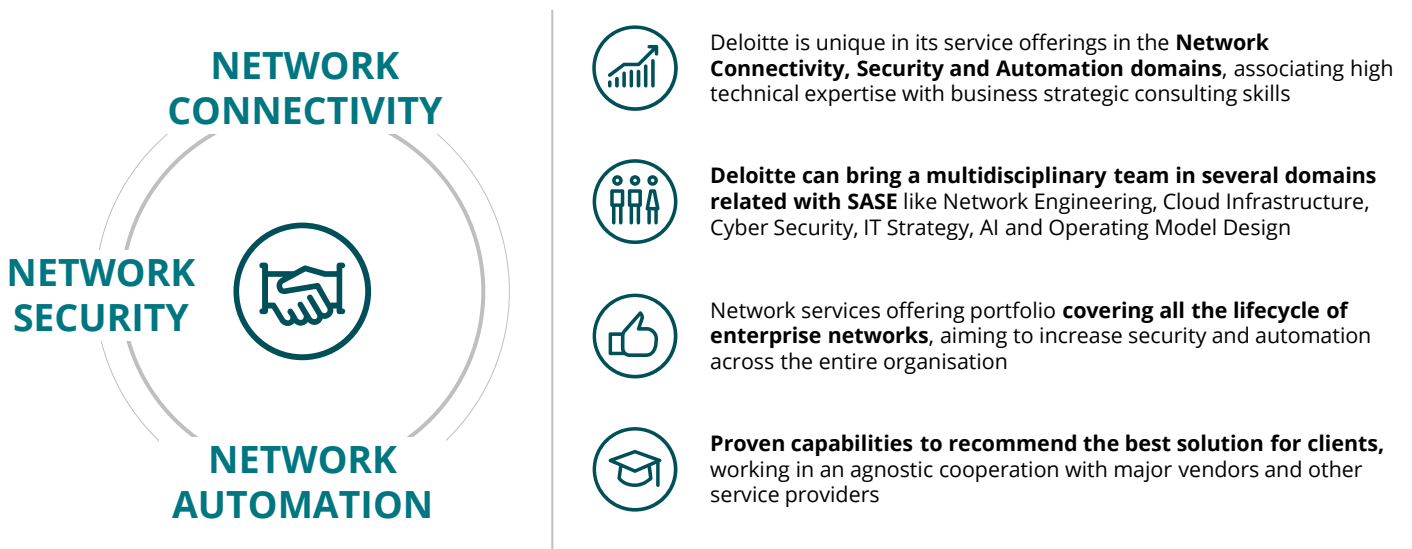
Setup and manage an efficient vendor ecosystem

Adoption of as-a-service models increases the **need for vendor management capabilities**. A successful organisation knows how to negotiate **efficiently in order to take the best out of their partners**

Why Deloitte?

Deloitte has a unique combination of expertise in various network domains, from virtualisation to security, being a trust-worthy advisor for every step of the network transformation journey

Advise, implement and operate



Our skills



Software defined network

- Site to site and plant to plant connectivity, leveraging software defined WAN (SD-WAN) solutions based on hybrid connectivity models (MPLS and Internet)
- Datacentre infrastructure & next generation DC solutions (e.g. SD-DC)
- LAN & WLAN refreshment including introduction of SD-LAN capabilities
- Cloud connectivity models within the organisation network



Network security

- Network security strategy based on Zero-Trust concepts and SASE principles
- Network security controls, including next-generation security features
- Governance model and network segmentation
- Micro-segmentation solutions
- Risk assessment and compliance based on audit-ready reports for all major regulations



Network automation

- Network Planning, Engineering & Operations
- NOC automation, predictive network maintenance and self-healing solutions
- Network orchestration to automate security and network workflows

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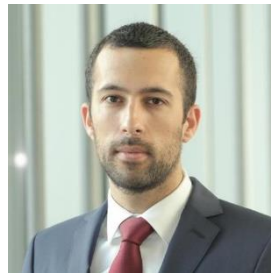
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