

# ngena managed SD-WAN-as-a-Service Company Presentation





01

ngena –  
overview

**ngena**  
The Shared Network

# Who is ngena?

- ngena stands for “Next Generation Enterprise Network Alliance” – an alliance of service providers from across the globe
- Start-up company founded in 2016, providing global business networks to alliance partners
- Transforms alliance partner networks into a single Software Defined Network (SDN)
- Service delivery platform based on Network Function Virtualization (NFV), service orchestration and end-to-end process automation
- Alliance partners offer high quality standardized global VPN services to their business customers

ngena



# ngena at a glance

“SD-WAN as a Service @ ngena” provides innovative and highly standardized global business networks together with Cisco

1. **Disruptive technology:**  
*Cloud platform for networks built together with Cisco*
2. **New business model:**  
*Build a global alliance based on a “shared economy” model*
3. **Strong distribution model:**  
*Wholesale model with trusted and established service partners*



Service delivery platform based on Network Function Virtualization (NFV), service orchestration and end-to-end process automation

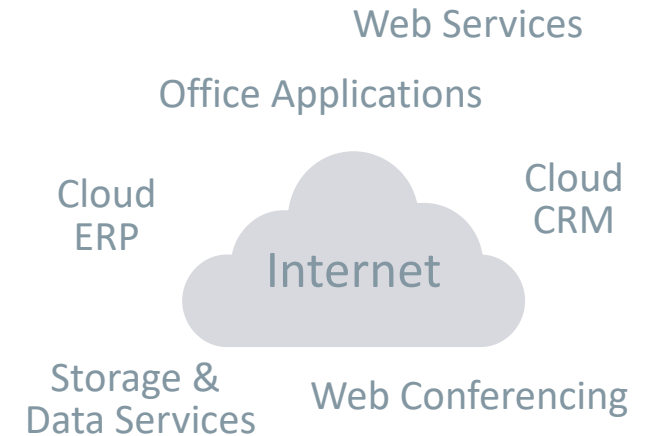
Turns the networks of alliance partners into one Software Defined Network (SDN)

Alliance partners, i.e. telcos and system integrators (SI), offer high quality and standardized global VPN services to their business customers



# Challenges for enterprises: digitalization, globalization and new IT-solutions

- Truly global connectivity
- Public Internet as integral part of corporate networks
- Multi service platforms are required to reduce complexity
- Cloud services become dominant delivery model



# New network requirements demand new WAN services

Today business customers lose productivity, business opportunities and revenue ...

... due to insufficient WAN performance.

- Long and unpredictable lead times to connect sites
- Patchwork of networks, products and solutions
- Huge effort for implementation and transformation
- Lack of network agility and low speed of innovation







# What we deliver: best connections!

ngena provides an innovative and highly standardized global business network that is:

- quicker to implement
- better scalable
- more secure
- easier to use
- more stable
- less complex

than any other solution in the market

# Digitalization driving global SD-WAN demand

## Mega Trends



**Decentralization:** 80% of employees and customers are served in branch offices



Revenue growth (CAGR) **2017–2021** for global SD-WAN infrastructure & services

**US\$ 8.05bn**

global SD-WAN infrastructure & services revenue by 2021



**Globalization:** 41% of businesses globally say they do business in countries outside their own



**18% decrease** in MPLS revenues expected in Western Europe by 2020

**US\$ 106bn**

global VPN market in **2022** and CARG of **+13%**



**Bandwidth demand:** 21% global business IP traffic growth (CAGR) 2016–2021



**50% of WAN edge** infrastructure refresh initiative based on SD-WAN by 2020



**Cloud adoption:** 70% of large scale enterprises use cloud applications



**58% of enterprises** will be deploying SD-WAN services by 2018/19



**18% worldwide** public cloud services market growth in 2017



**80% of IP-VPN** RFPs demanding SD-WAN solutions today

## Effects on SD-WAN


**IDC: “SD-WAN growth is exploding for at least the next 5 years”.**


Sources: 1. Gartner/Viptela; 2. Sage/Populus; 3. Cisco; 4. IDG; 5. Gartner; 6. IDC; 7. IDC; 8. Gartner; 9. Ovum; 10. IDC; 11. IDC; 12. Market Research Future





# Traditional and new ways of building global networks


Traditional

 Hardware Centric >


 Manual >


 Closed >


 Reactive >


 Connectivity Intent >


Software Defined/SDN

 Software Driven

 Automated

 Programmable

 Predictive

 Business Intent

Cloud Based	Automation & Scale	Security & Compliance	Assurance & Analytics
Hosted, managed	Speed, flexibility, zero-touch, policy driven	Segmentation, threat mitigation	Users, applications, devices

# ngena's company quick facts & management

## Company

ngena is a privately held, limited liability company (Gesellschaft mit beschränkter Haftung - GmbH)

## Location

- Headquartered in Frankfurt am Main, Germany
- Further sites in Debrecen (Hungary) & Košice (Slovakia)

## Facts

- Founded in 2016
- 155+ employees



### Dr. Marcus Hacke

Founder & Managing Director

#### Background:

Marcus developed the idea of ngena. His responsibilities comprise product management, platform engineering and operations.



### Bart de Graaff

Managing Director

#### Background:

Bart joined ngena in May 2019. His key responsibilities cover partner management, sales and marketing.







## Uber

global logistics provider  
facilitating shared transport  
services

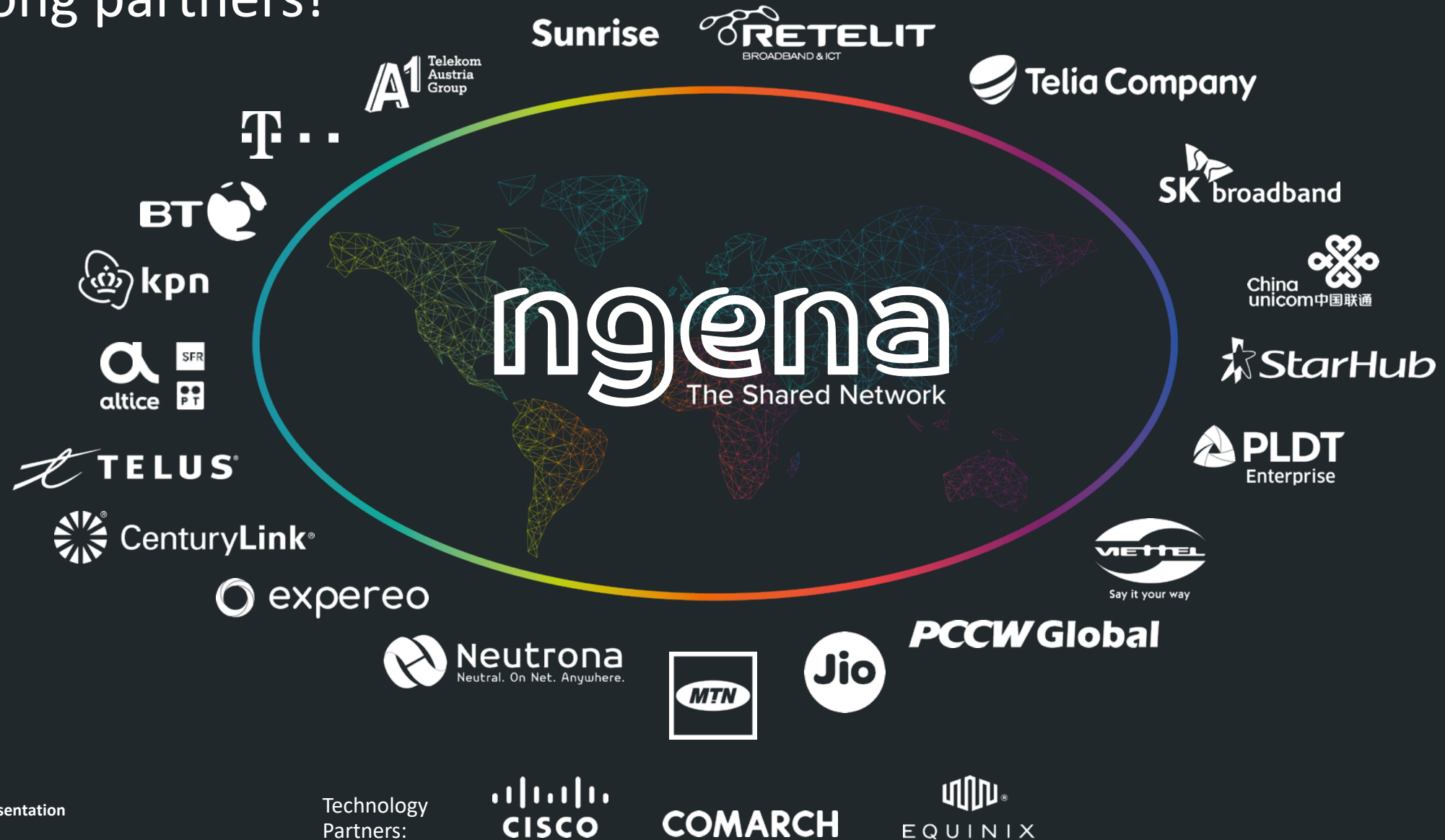
## Airbnb

global lodging provider  
facilitating shared lodgings

## ngena

global network provider  
facilitating shared network  
service

# An ecosystem of strong partners!





# ngena – how we work with our partners



ngena turns the networks of all alliance partners into a single Software Defined Network (SDN).

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Every alliance partner remains responsible for its customers in its respective region.

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Alliance partners can offer their enterprise customers high quality, standardized global SD-WAN services – end-to-end managed by ngena.

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ngena uses innovative cloud technology (network function virtualization), end-to-end orchestration and full automation.

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Our technology partners (Cisco, Comarch, Equinix) deliver the necessary technical foundation for all cloud and virtualization features.

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# How we take care of a customers order



**Your telecoms provider**  
("ngena's A-end partner")

## Single point of contact to the customer

- from quotation to fulfillment
- monitors network performance
- reporting and managing changes



## End-to-end service provider

Coordinates full customer solution design

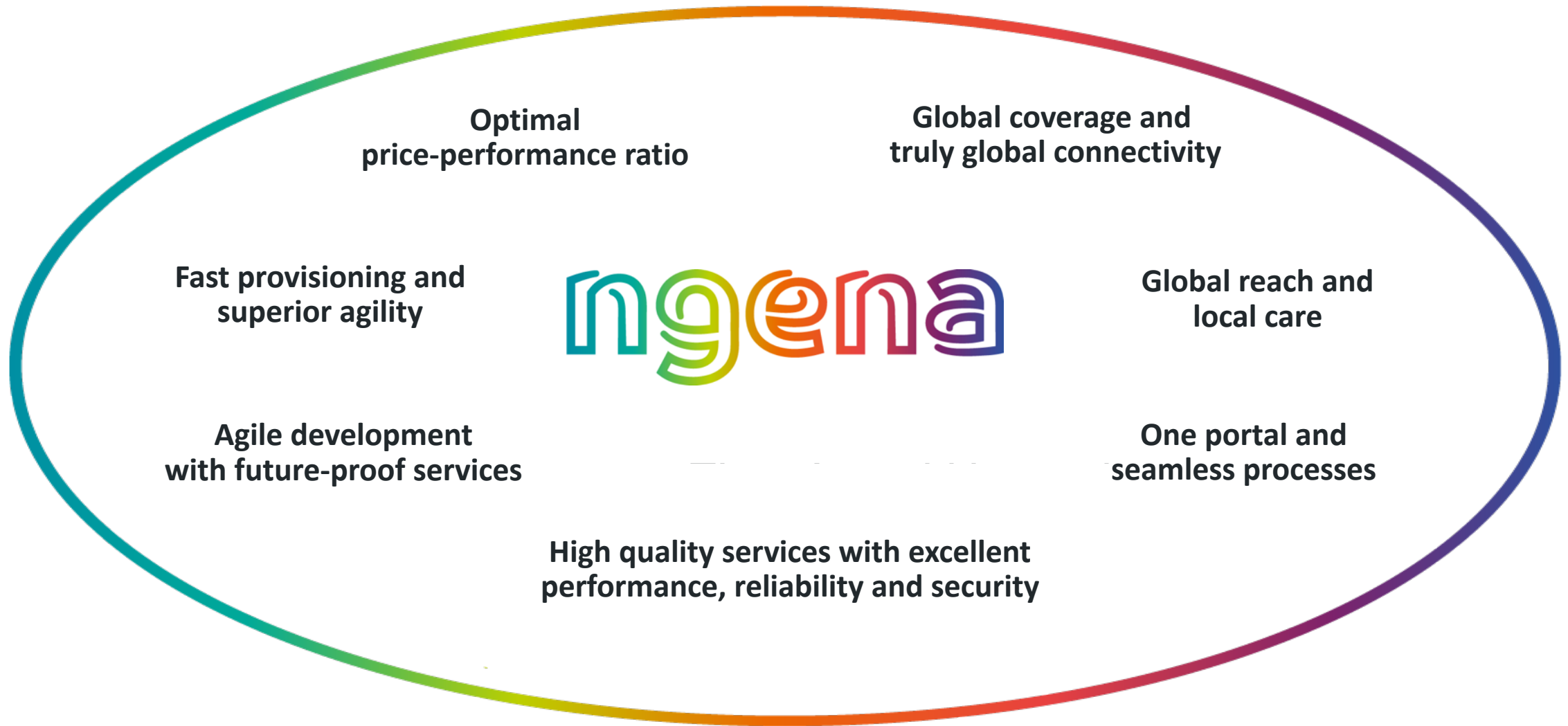
- orders local access,
- coordinates global dispatching and installation of CPE
- test and turn-up, hand-over the solution to the alliance partner



## Local alliance partner ("B-end partner")

- Provides local Ethernet and/or Internet access including on-site installation & field service

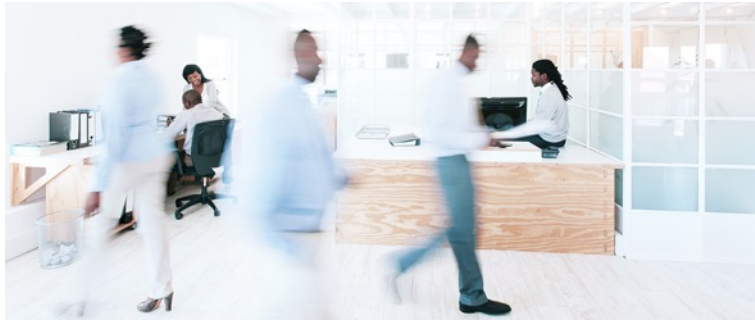
# ngena's network: tremendous benefits for enterprises





# ngena: advantages for business customers

## Customer Experience



- **Coverage:** strong partners with leading market positions in their regions
- **Security:** highest security for business-critical applications
- **Quality:** homogeneity of the network with end-to-end service and quality levels

## Innovation



- **Business model:** first sharing economy model for networking expands reach
- **Technology innovation:** network technology based on virtualization. Completely software defined
- **Customer service updates:** near real time

## Agility



- **Rapid deployment:** fast implementation and roll-out, self provisioning
- **Rapid development:** agile and continuous development of network and features
- **Fast ordering:** virtualized services & functionalities in near real time

# Customer Testimonial

## Challenge

- Increasing bandwidth need
- Application specific challenges
- Severe cloud application latency
- Any-Any connectivity
- Changing requirements
- Complex (traditional) network
- Branch-driven technical variety

## Why ngena?

- Easy to deploy, no project needed
- Access to leading (Cisco) capabilities
- Price/ performance
- Globally consistent
- Gradual roll-out/ migration
- Changeability of solution
- SDWAN network design



**IMPERIAL  
BRANDS**

*“...we luckily found everything we needed with  
ngena SD-WAN-as-a-service...”*

Karen Charlton, Global Service Technology Lead at Imperial Brands PLC



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## Technical concept and service portfolio

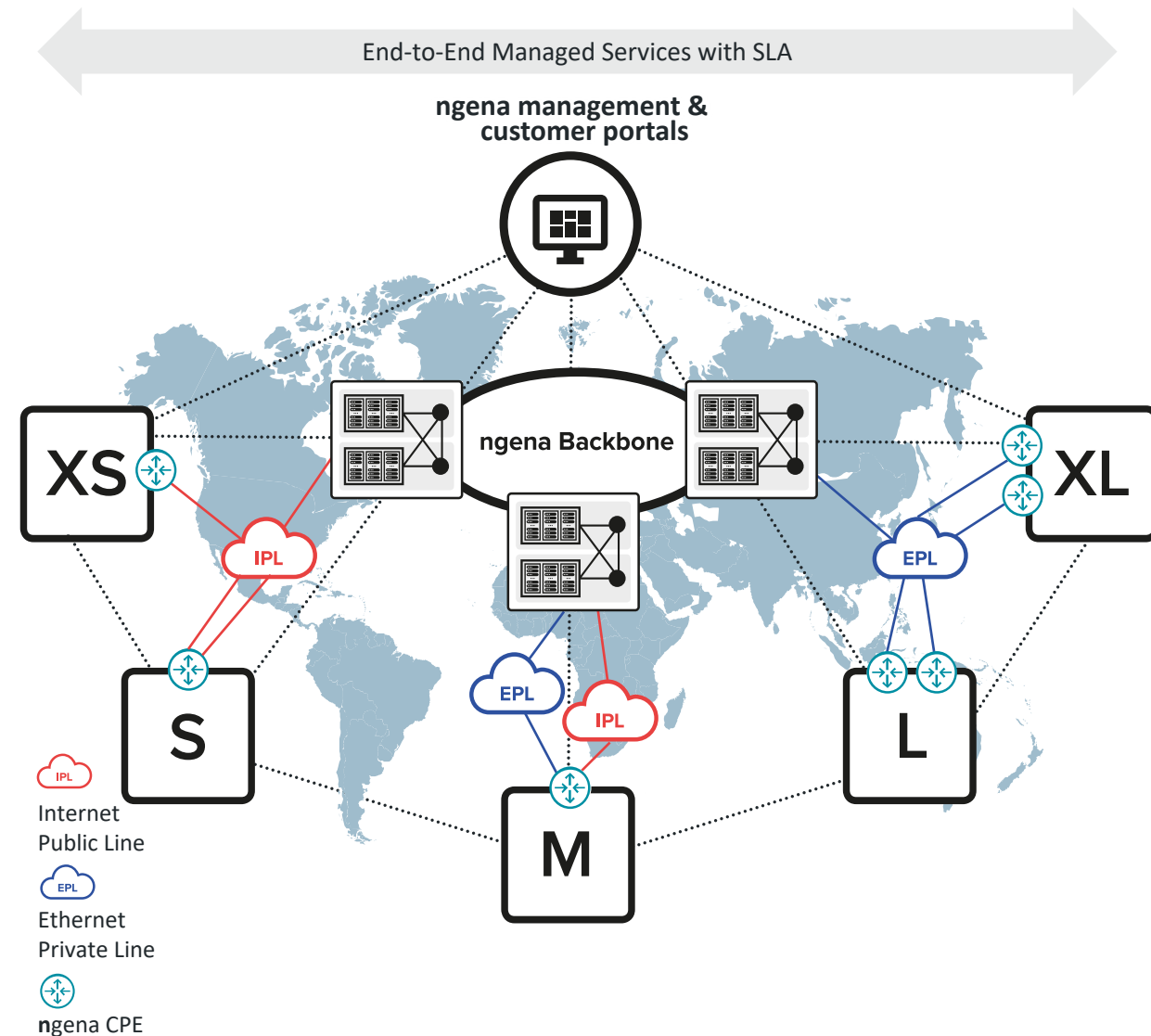




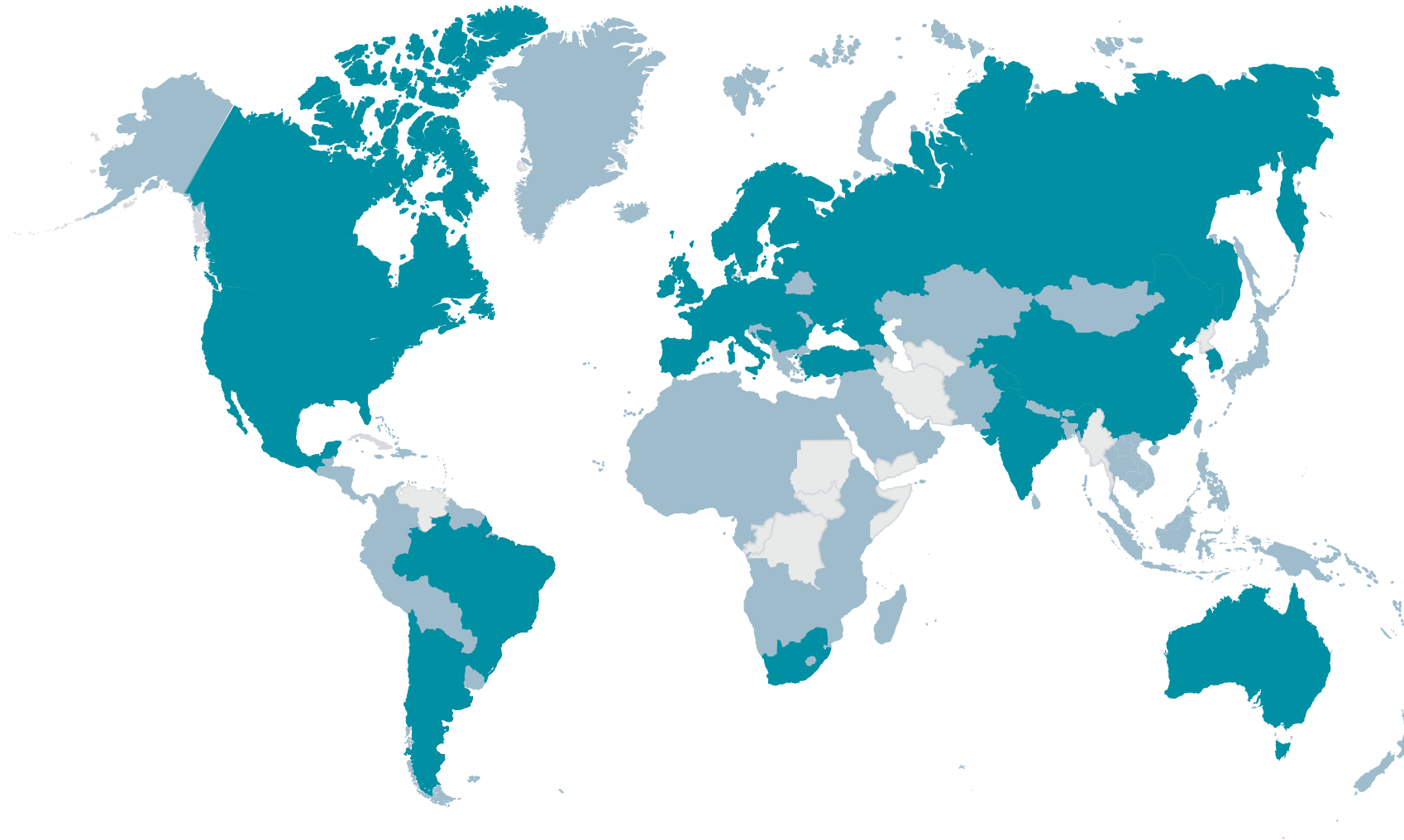
# Solution overview

## Design principles

- ngena managed SD-WAN-as-a-Service:  
Offering comprehensive hybrid VPN services
  - Internet connections (IPL)
  - Ethernet links (EPL)
- All access designs with one portal and seamless processes
- End-to-End orchestration and full automation
- Global private backbone
- Broad set of additional functions and value-added services





# ngena solution is ready to quote on large scale

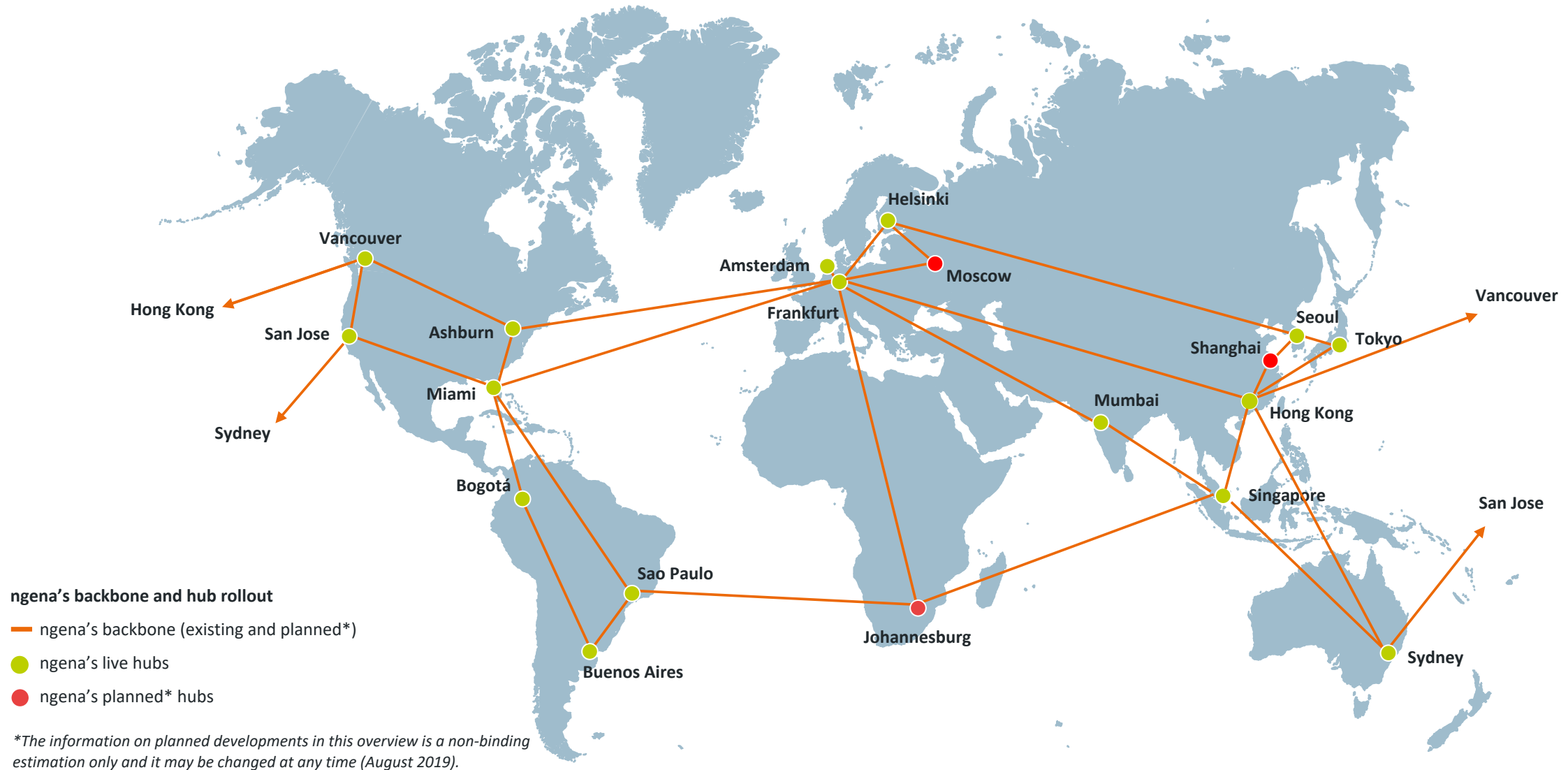


Regions / Access types	No. of countries		
	IPL	IPL & EPL	Total
Africa	50	1	51
Europe	18	29	47
Asia Pacific	33	10	43
Central & South America	39	5	44
Middle East	13	0	13
North America	2	2	4
<b>Sub-Total</b>	<b>155</b>	<b>47</b>	<b>202</b>

ngena's coverage – ready for quotation as per July 2019 for access types based on

-  Ethernet Private Line (EPL) + Internet Public Line (IPL)
-  Internet Public Line (IPL)

# ngena's global hub and meshed network backbone





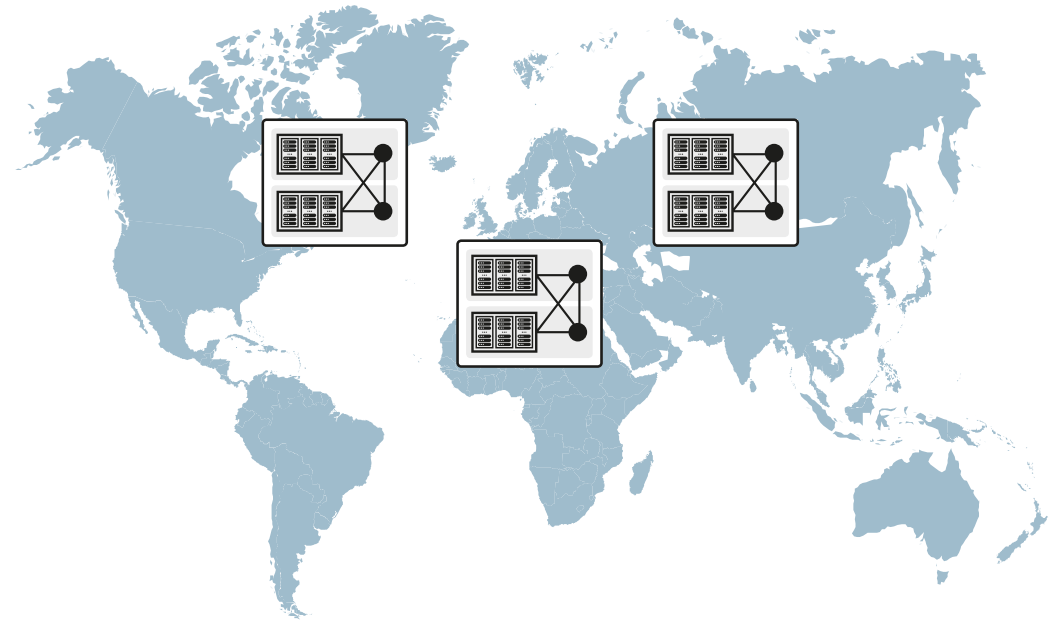
# Brief product solution overview

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## ngena Hub

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- Data Centre with Virtual Infrastructure Management
  - Service chain to deliver Value Added Services (e.g. Firewall etc.)
  - Full automation and orchestration (service catalogue driven)
  - Resilience and high-availability
- 



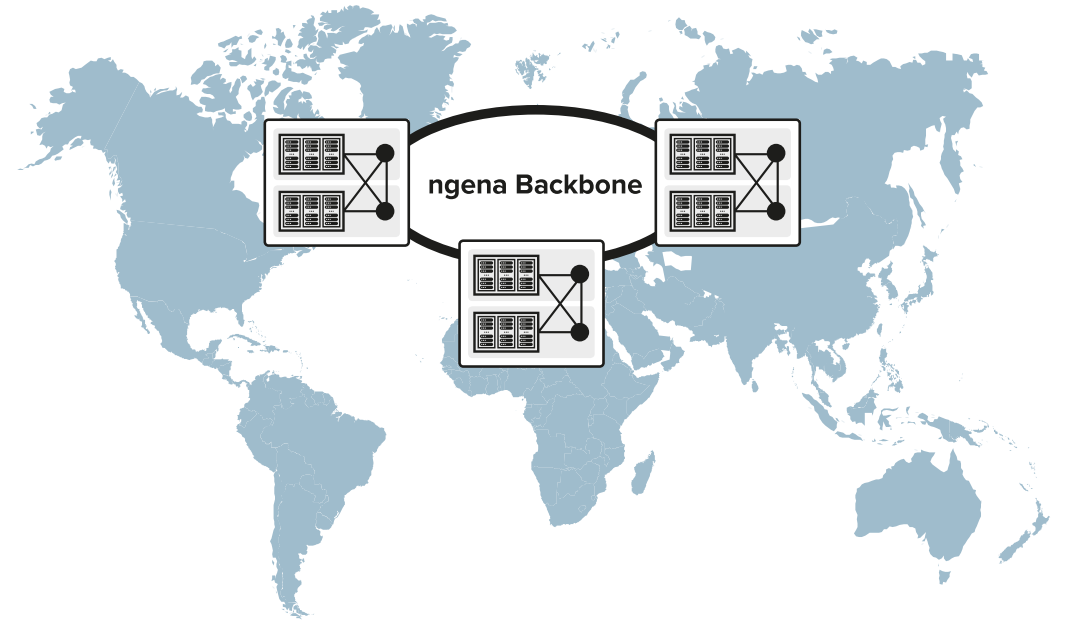
# Brief product solution overview

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## ngena Backbone

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- Interconnection between ngena Hubs
  - CoS/QoS-based routing
  - Encryption (data & control plane)
  - Resilience
- 



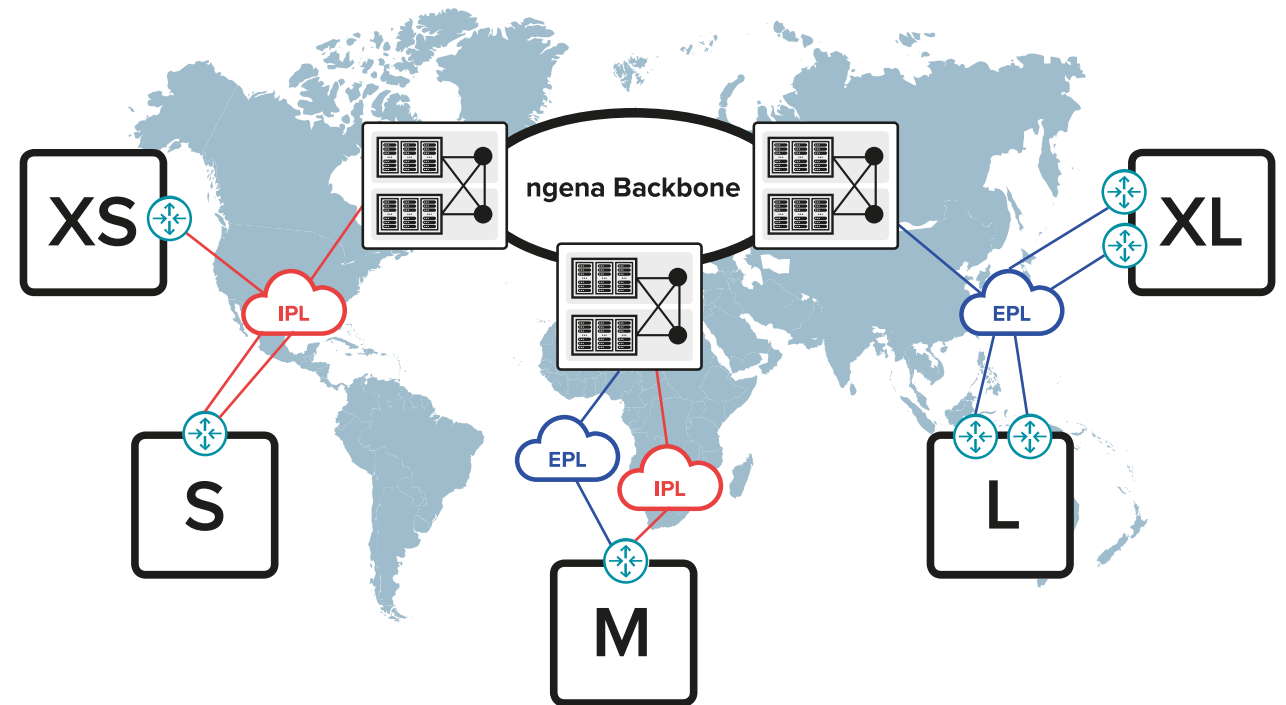
# Brief product solution overview

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## ngena VPN

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- Network agnostic SDN-based VPN
  - Standardized Access Designs
  - Hybrid access (EPL- and IPL-based)
  - E2E encryption (site pairwise)
  - Zero-touch CPE configuration
  - Path management
- 

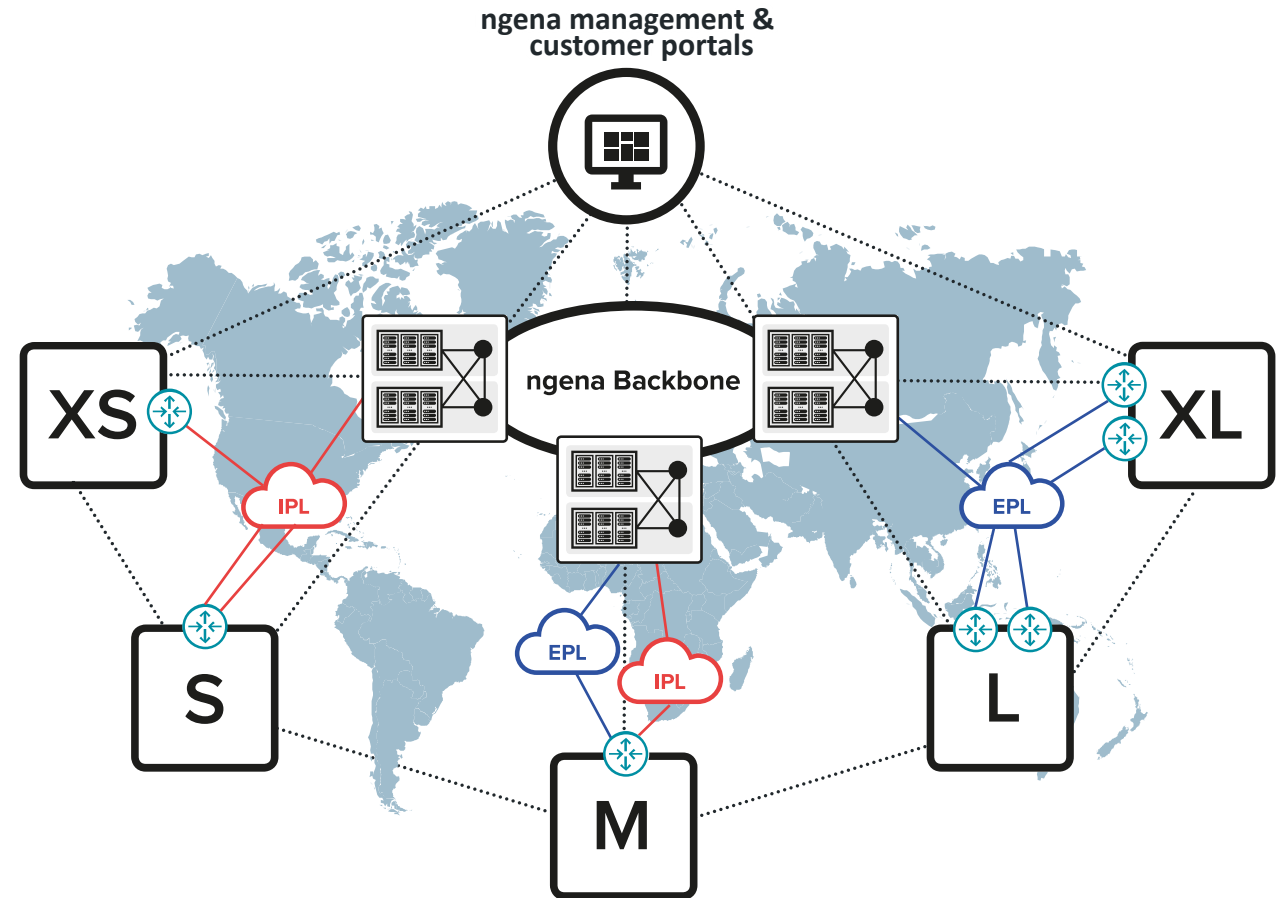




# Brief product solution overview

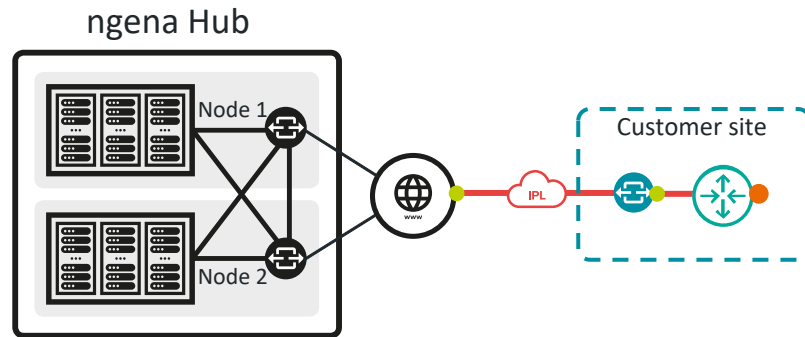
## Centralized Management

- Product catalogue driven service design and configuration
- End-to-End process automation
- NFV-based services & centralized orchestration

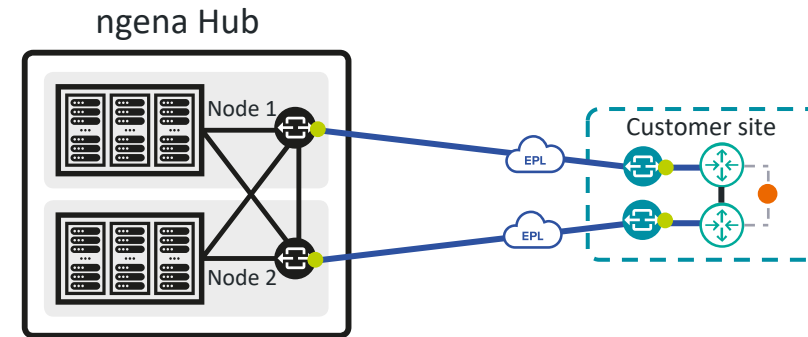


# ngena's Access Designs - I

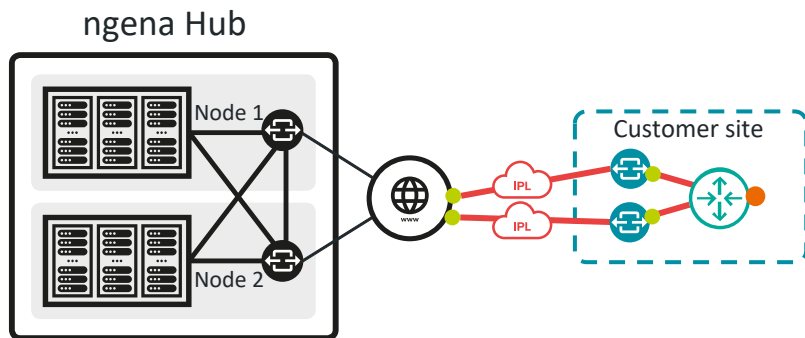
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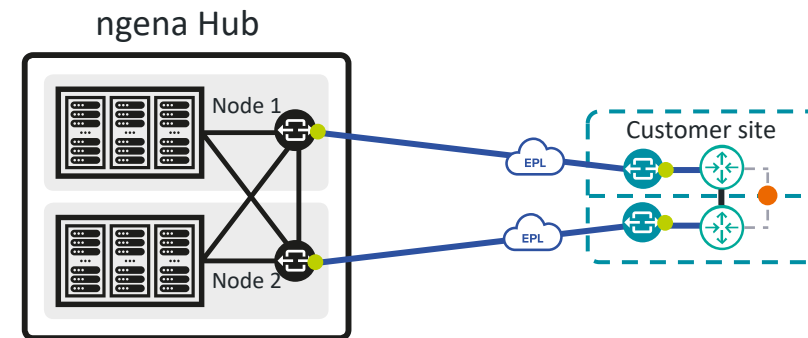
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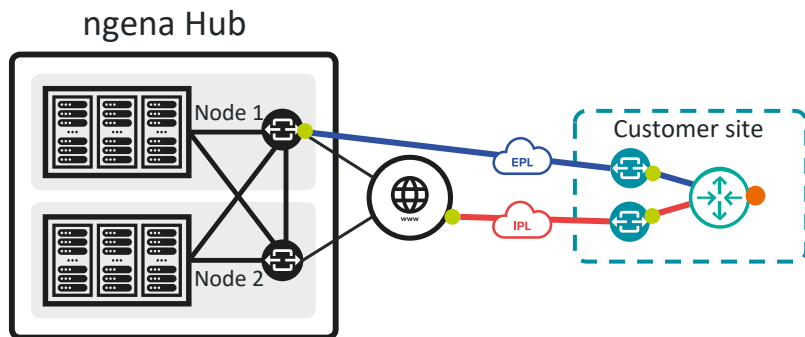
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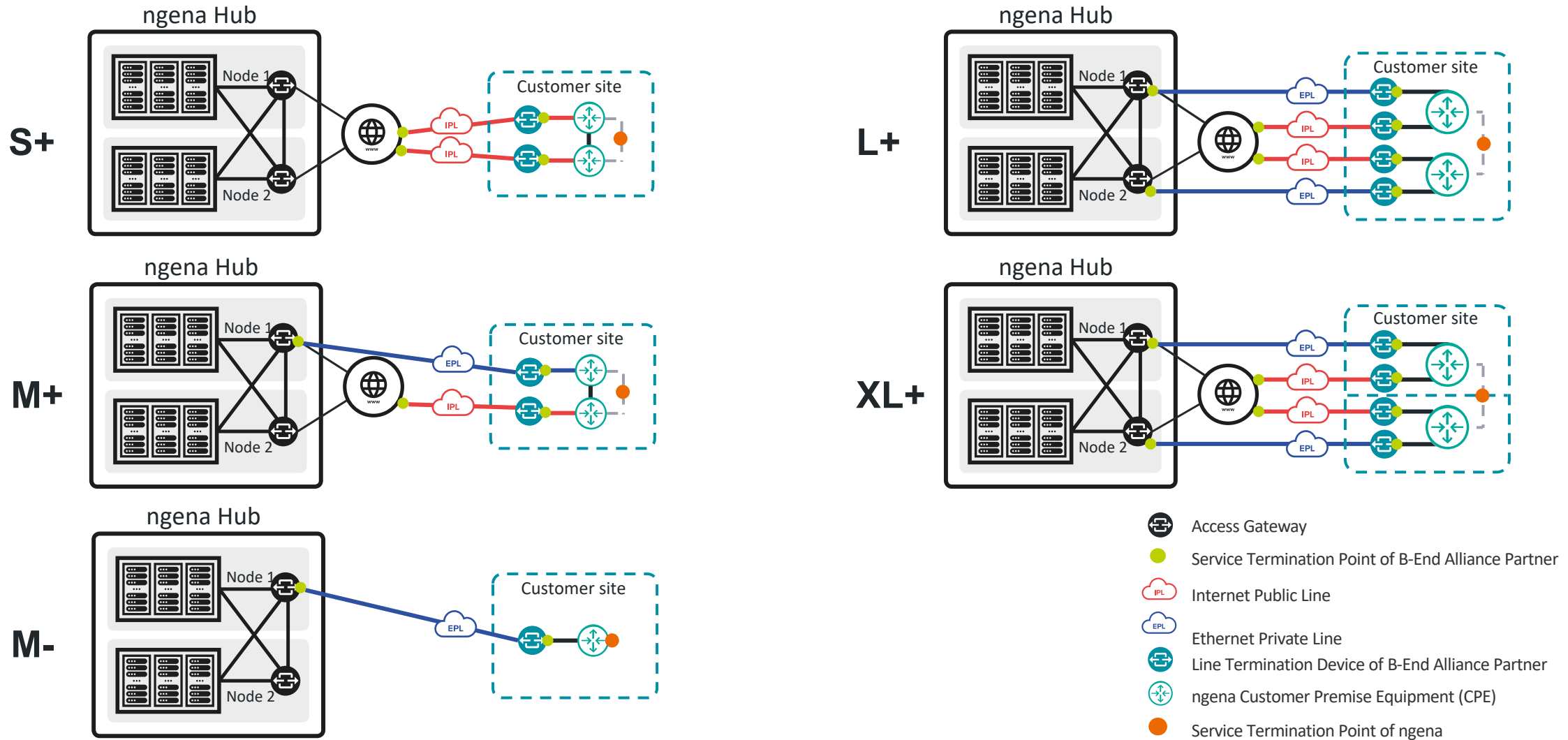


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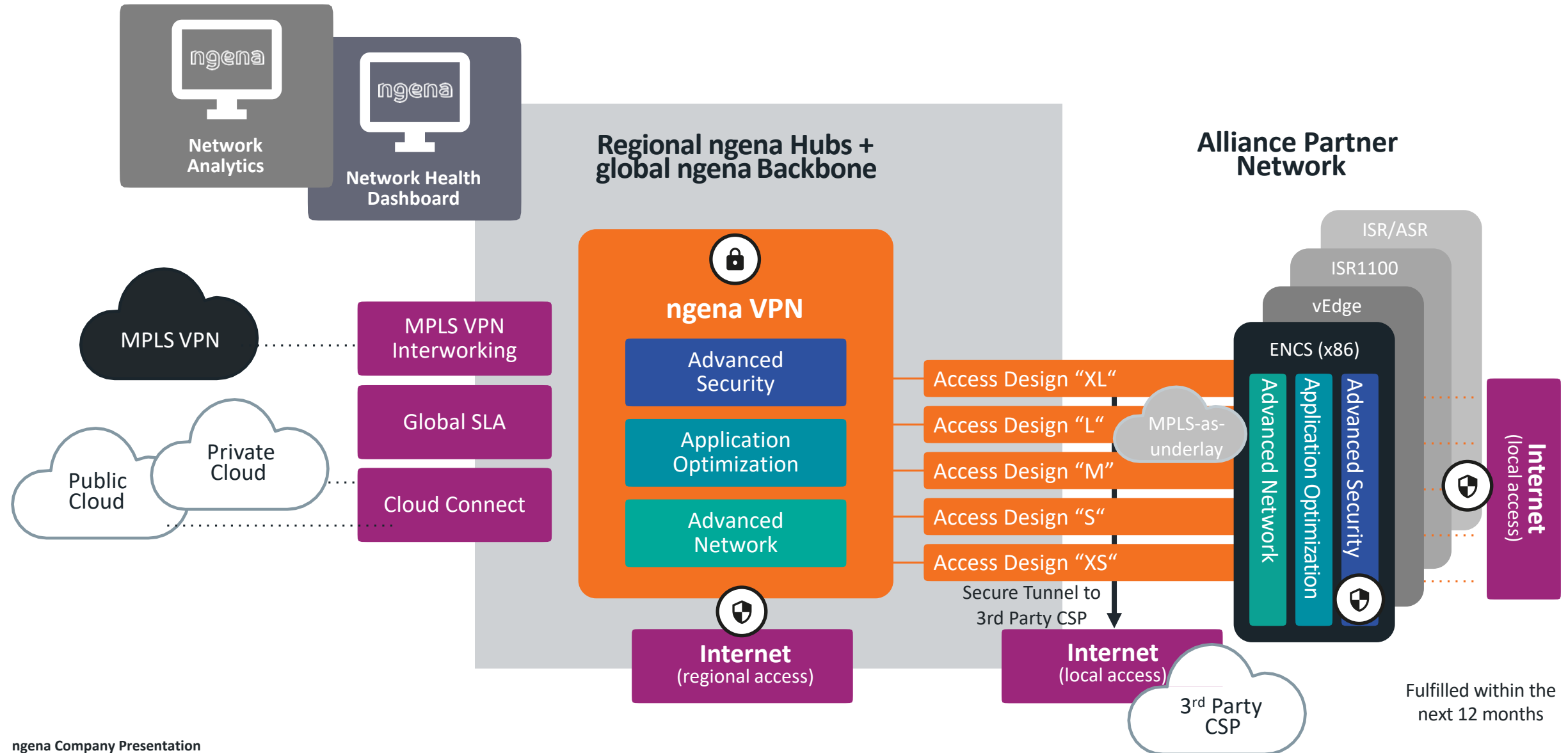
- Access Gateway
- Service Termination Point of B-End Alliance Partner
- Internet Public Line
- Ethernet Private Line
- Line Termination Device of B-End Alliance Partner
- ngena Customer Premise Equipment (CPE)
- Service Termination Point of ngena

# ngena's Access Designs - II

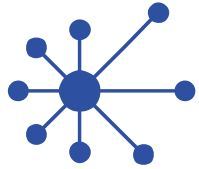




# ngena's portfolio: the big picture



# Value added services



## Advanced Network Services

Internet Access (regional/central/local), Multi-VPN, CoS/QoS, Nomadic Access, VPN Gateway to interconnect with MPLS VPNs, Intelligent path management (static and dynamic), Micro-Hub for remote areas or as aggregation point, embedded WAN/LAN/WLAN management

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## Advanced Security Services

Firewall and Web-Security to protect against threat originating from the Internet, Next Generation Firewall and DDOS protection

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## Application Optimization Services

Application Aware Network – NBAR based automated Application Marking for CoS allocation, end-to-end application optimization and acceleration with vWAAS (based on vBranch)

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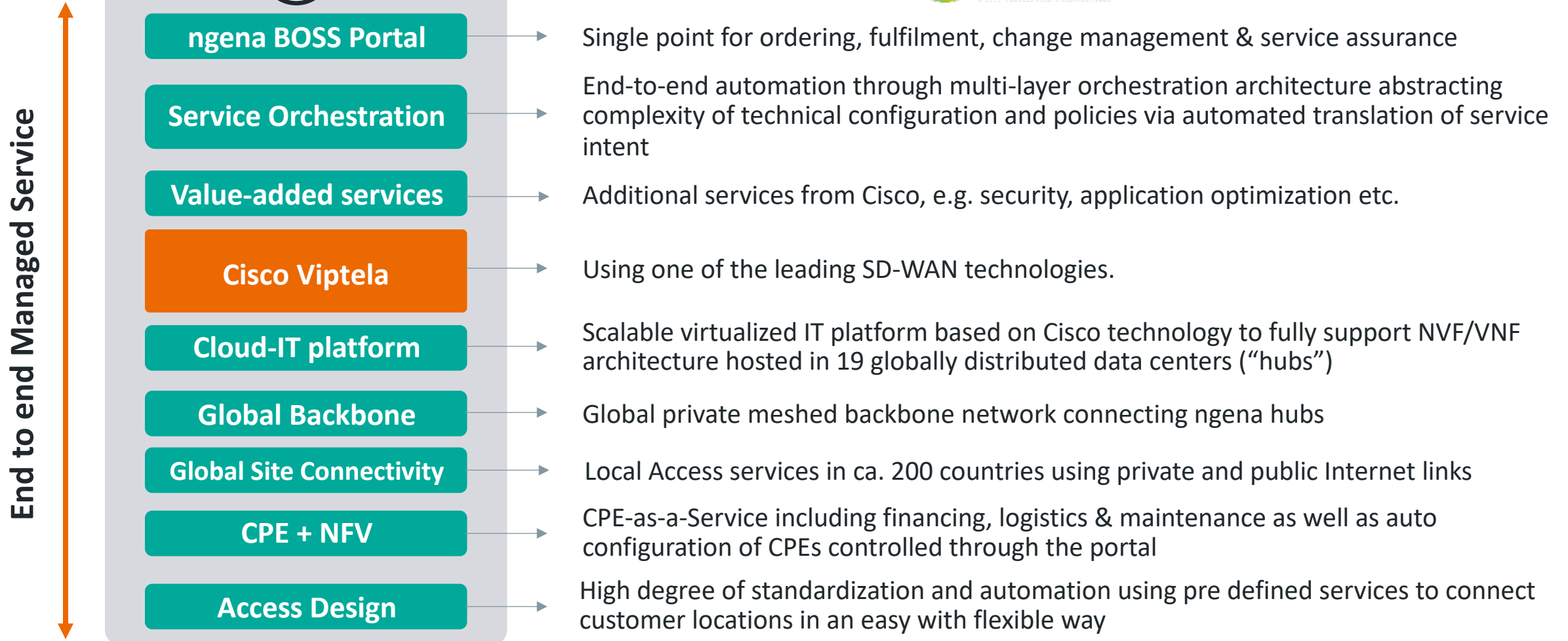
## Cloud Connect Services

Cloud Connector to public cloud services for optimized access (secure, and offering high performance)

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# Fully managed SD-WAN-as-a-Service

## Single Service Portfolio







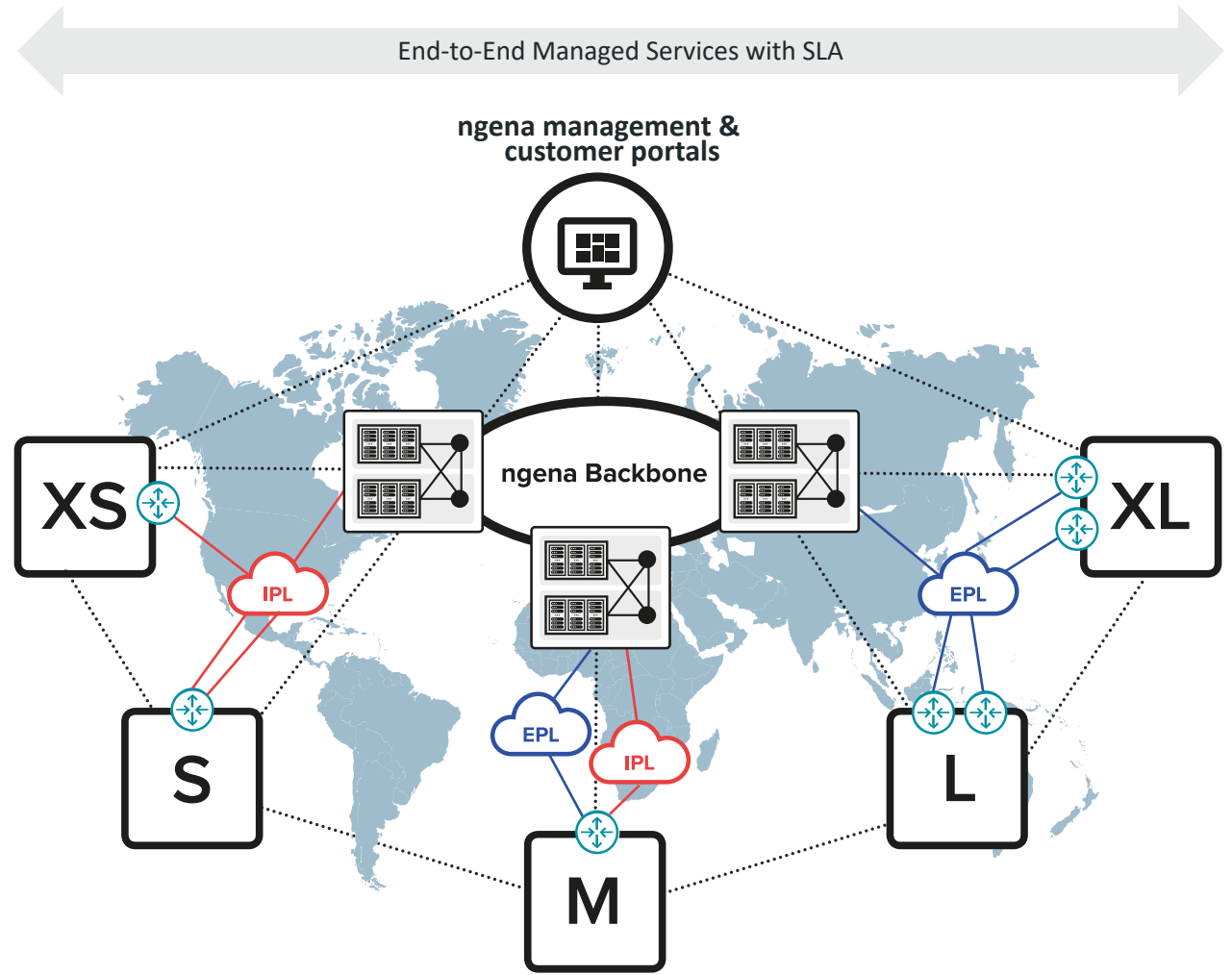
03

## Automations and operations

# Brief product solution overview

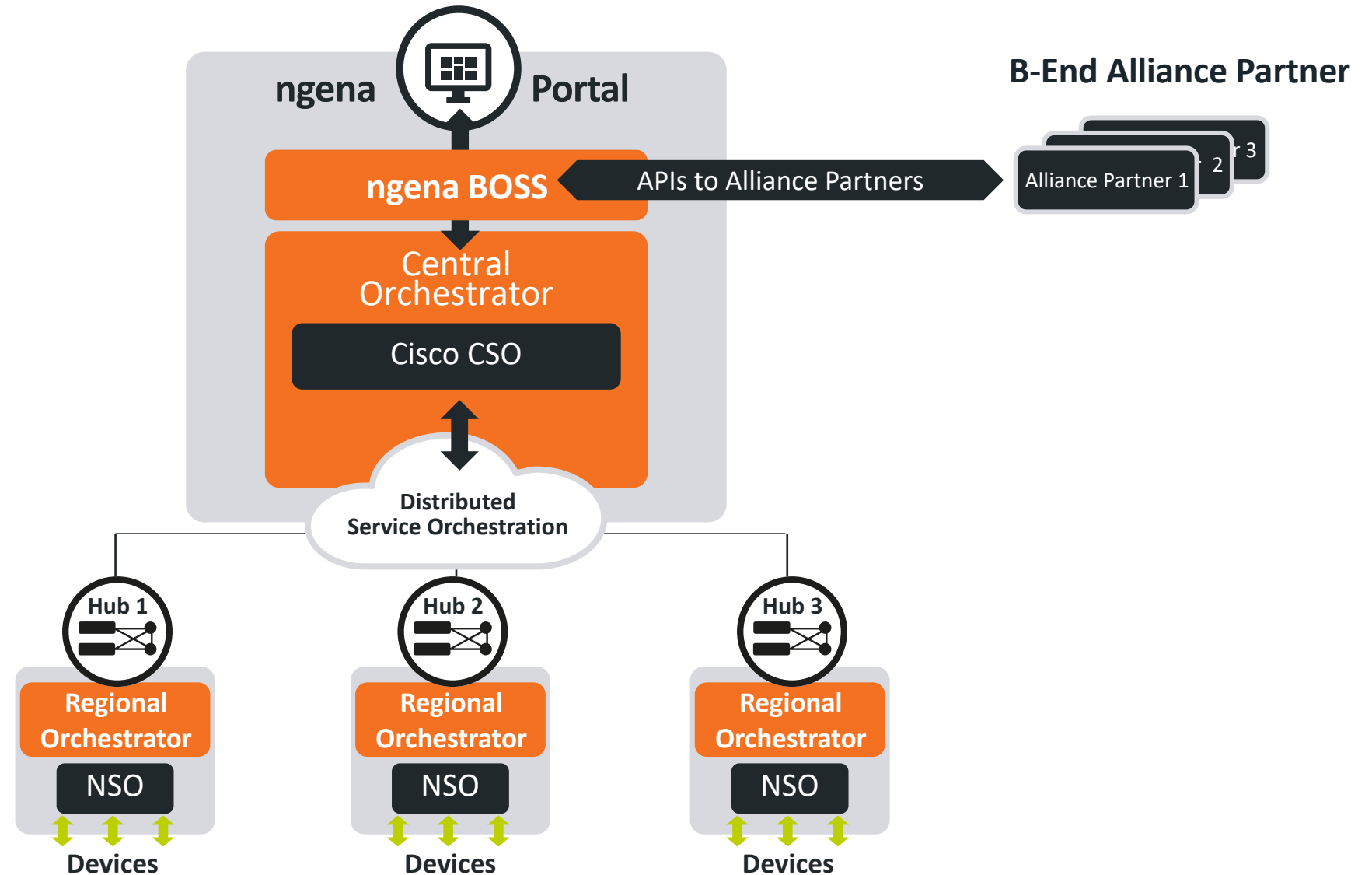
## E2E Managed Services

- E2E managed solution
- Field support
- Proactive & reactive service management
- Customer Care Portal
- Service performance visibility
- Global SLA



# End-to-end automation with a model-driven architecture

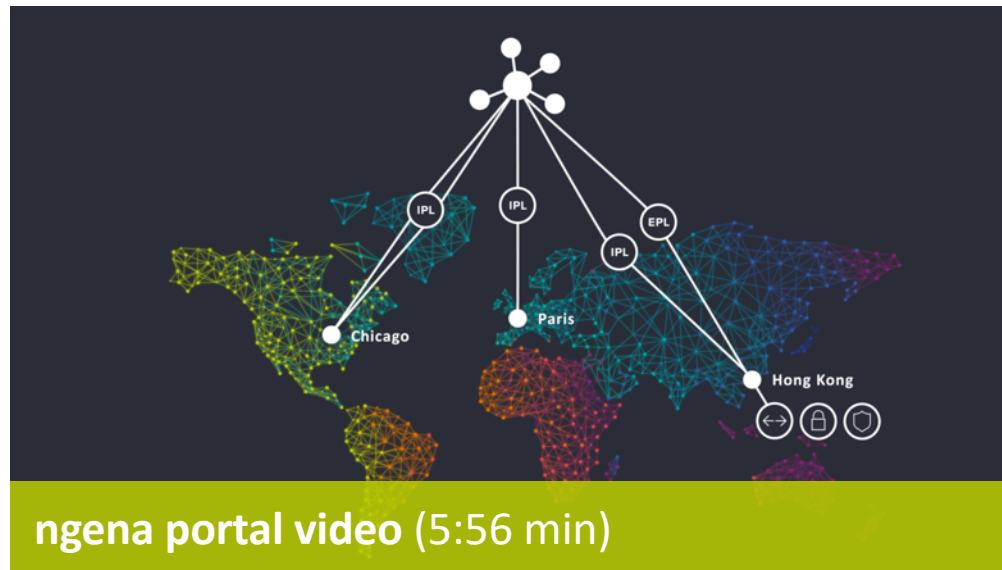
COMARCH



# The ngena portal

The ngena portal is the single entry point to support all interactions between alliance partners and ngena. It is a multi-tenant portal with role-based secure access which supports different views for an alliance partner.

To get a first impression of the ngena Portal, have a look at our video: <https://youtu.be/0XegTEYShew>





# Overview of ngena alliance partner-facing portals

ngena BSS/OSS platform

# Business Support System (BSS)

# Operations Support System (OSS)

# Overview of ngena alliance partner-facing portals

## ngena BSS/OSS platform

### Business Support System (BSS)

Customer Relationship Management (CRM)

Network Solution Configurator

Customer Order Management

Invoice and Report Presentation (with backend billing system)

Complaint Management System

Product Management System (based on resource DB & APIs)

### Operations Support System (OSS)

Fulfilment Workflow System (NGSF)

Trouble Ticket Management System  
– with integration to incident  
monitoring and analytics tools (NGSA)

# What does the ngena portal mean for procurement?

Quotation  
in 60  
minutes

The screenshot displays the ngena portal interface, which is a procurement system. At the top, there is a header bar with the ngena logo, a search bar, and navigation links for 'Amazing Solution' and 'Amazing Internati...'. Below the header, a navigation bar shows the current workflow steps: 'Add new products', 'Change existing products', 'Configure items', and 'Summary'. The main content area is titled 'Available offerings' and displays a list of products. The first product is 'Access Design M', which is a bundle. It is available for 24, 36, 48, and 60 months, with a price of EUR0.00 per 1 month. The second product is 'Access Design S', also a bundle, with the same pricing and availability. The third product is 'Access Design XS', and the fourth is 'Global VPN'. The interface includes filters for 'Text', 'Bundle', 'Product family', and 'Commitment period'. A 'Request for binding quote' button is visible in the top right corner of the main content area.

ngena by COMARCH CRM

Search

Amazing Solution

Amazing Internati...

BUDO/201711/1041 New Amazing International 14284

EUR1,532.95<sup>\*</sup> one-time | EUR6,668.94<sup>\*</sup> per 1 month

4 28

Cancel Request for binding quote

Add new products Change existing products Configure items Summary

### Available offerings

United States, IL, Chicago 60647, W Armitage Ave 2101 Add address View Business Customers Reset AC

FILTER VIEW SORT BY

Text

filter

Bundle

Yes 4 filter

Product family

ANY ALL

All conditions must be met

Internet 1 filter

Commitment period

Access Design M BUNDLE

Internet

EUR0.00<sup>\*</sup> per 1 month

24 months 36 months 48 months 60 months

Available

Access Design S BUNDLE

Internet

EUR0.00<sup>\*</sup> per 1 month

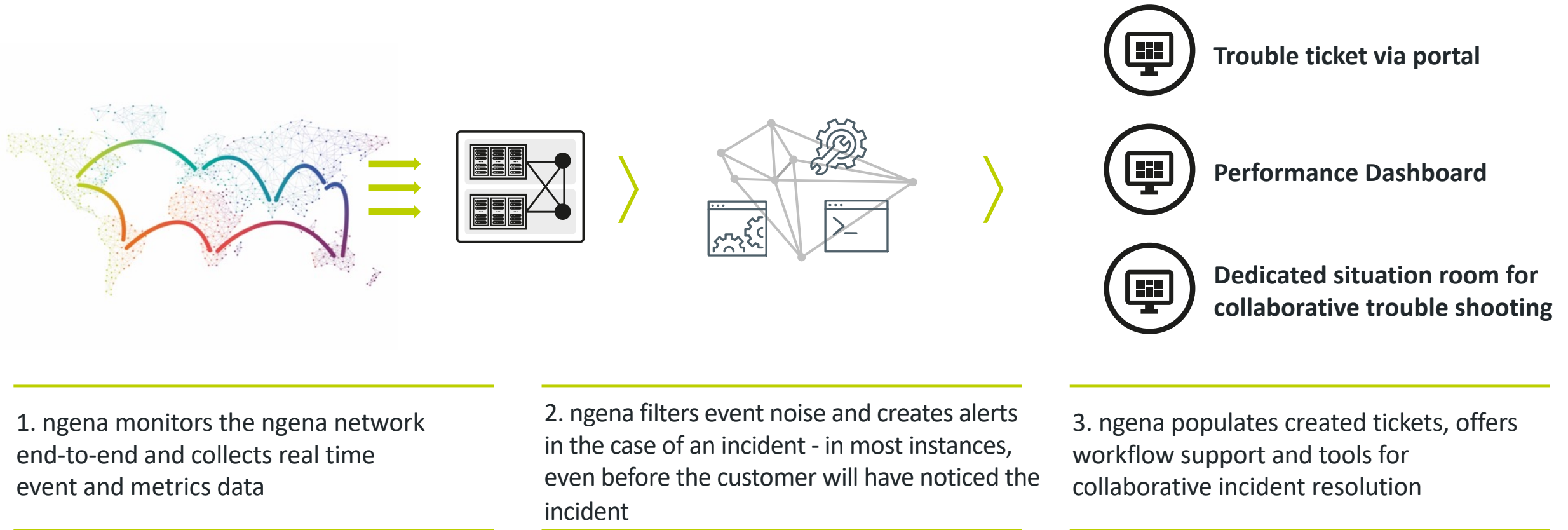
24 months 36 months 48 months 60 months

Available

Access Design XS BUNDLE

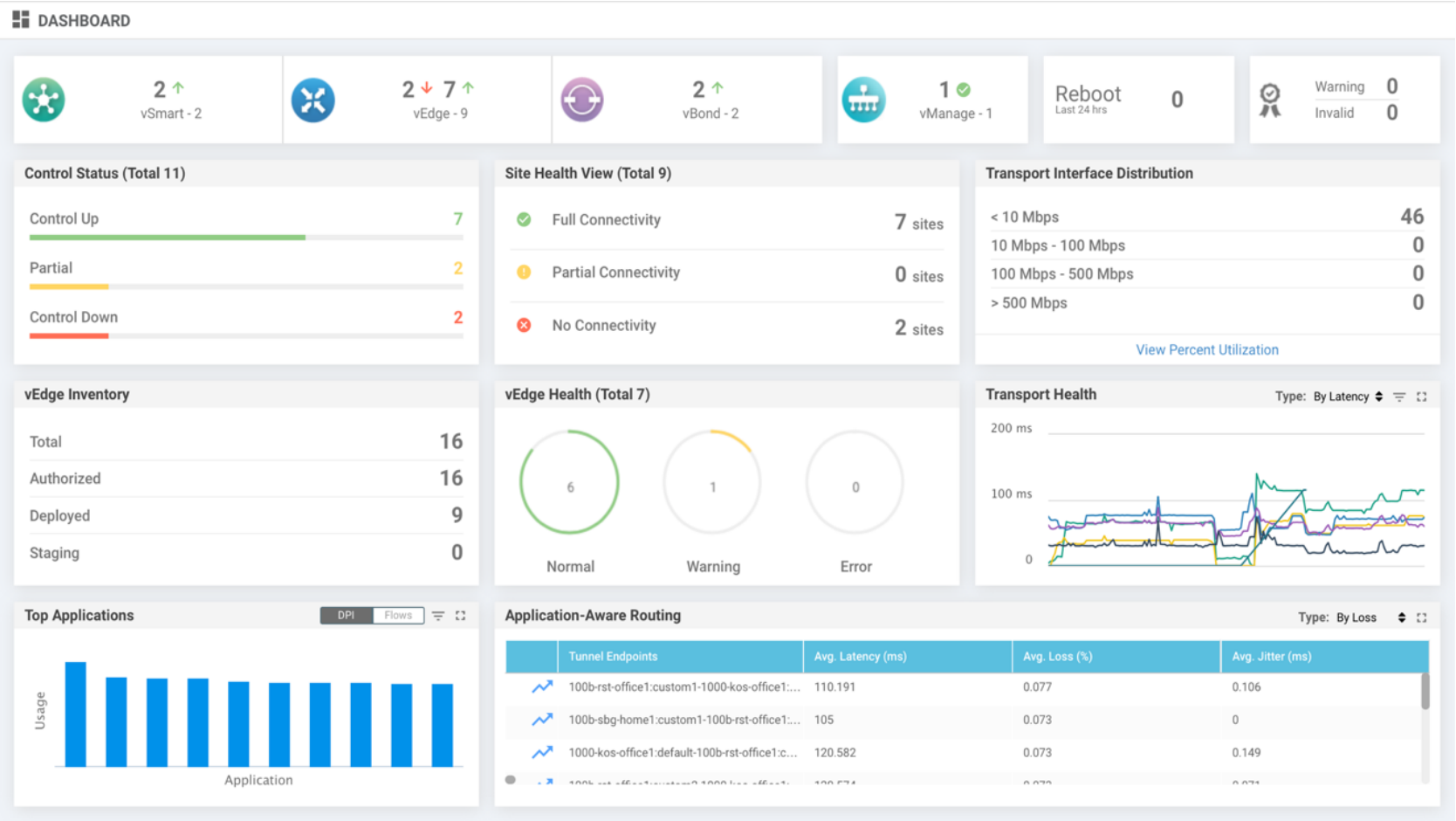
Global VPN BUNDLE

# How we monitor and proactively resolve potential operational issues





# Dashboard example – network overview



# ngena platform security – made in Germany



**ngena has implemented a strong security governance for its own platforms & infrastructure (global ngena hubs, private global backbone etc.) based on...**

- Compliance with the German Federal Data Protection Act
- Information security management system
- Configurable security and data privacy requirements
- Policy based security
- Set KPI indicators for review



**To ensure a high level of security, ngena has a clearly defined threat prevention & mitigation strategy with...**

- Proactive network vulnerability scan
- DDoS mitigation
- Regular penetration testing
- Set KPI indicators for review



**To achieve this, ngena uses a comprehensive security infrastructure**

- 3<sup>rd</sup> generation firewall with combination of application firewall & intrusion prevention system + DPI
- Next-generation intrusion prevention & detection system
- Centralized identity and access management
- Security information and event management system
- Use of encryption for all data in rest and in transit





04

What you should keep  
in mind



# ngena SD-WAN as a Service: Explained in 60 seconds



## ngena managed SD-WAN as a Service delivers...

- A global, hybrid VPN based on SDN technologies
- Diverse access designs and value-added services with a high degree of standardization in terms of technologies, processes and service levels

## ngena managed SD-WAN as a Service means...

- Strong regional partners in an international alliance
- Centrally managed as a result of a new form of service provisioning

ngena provides new and innovative VPN technologies to support digitalization efforts:

- quicker to implement
- better scalable
- more secure
- easier to use
- more stable
- less complex

...with this we are accelerating the network evolution!



# Partner and customer benefits

## Alliance Benefits

- Simpler service provisioning
- Faster time to revenue
- Lower operational costs
- Delivery of software-defined WAN services at scale
- Competitive differentiation
- Shared expertise



## Customer Benefits

- Fully automated provisioning process
- Highest network availability
- Best fit access options
- Fast innovation cycles
- Full transparency of production and processes
- End-to-end customer network management

**ngena enables alliance partners to become their customer's first choice in global networking**



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Dr. Marcus Hacke, Bart de Graaff

### **Head of Supervisory Board**

Robert Koffler

### **Commercial register**

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