



CASE STUDY

WINDSTREAM: INTELLIGENT MULTI-LAYER/MULTI-DOMAIN NETWORK AUTOMATION WITH SDN

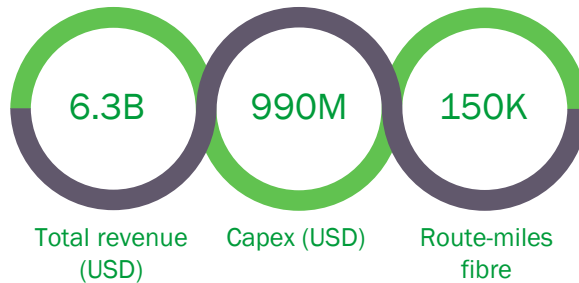
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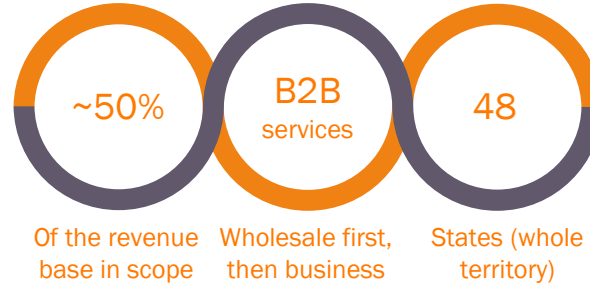


Windstream intelligent automation project overview

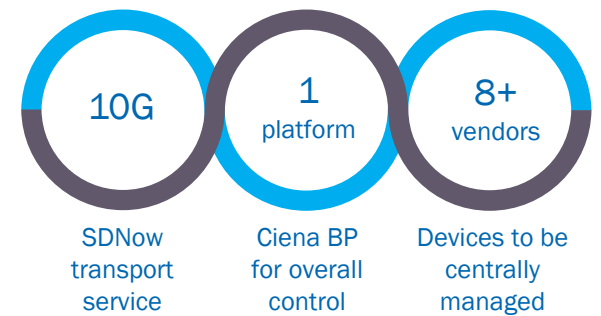
STATE OF THE BUSINESS¹



FOCUS OF THIS EFFORT



PROJECT APPROACH



BUSINESS DRIVERS

- Windstream faces stiff competition; operational efficiency and customer experience are crucial to meeting its market share and profitability goals.
- Heterogeneous network footprint due to acquisitions can complicate and lengthen network service provisioning times and make distributed device configuration updates difficult and costly.

STRATEGY

- Tap software-defined networking (SDN) to significantly reduce service cycles, starting with layer 1 wholesale services.
- Build a programmable network with Ciena's Blue Planet Intelligent Automation Platform to simplify operations and move to DevOps-centric processes.
- Extend to other packet/optical services over time; roadmap to 2H 2018 established.

ANALYSIS

- Improves efficiency and effectiveness of multi-vendor networks and drastically shortens 10G service cycle times.
- Encourages in-house innovation and reduces vendor control through DevOps.
- Streamlines multi-vendor packet-optical WAN operations and lowers costs using model-driven processes, unified APIs and network abstraction.



BENEFITS

Can now provision 10G wavelength services in 20 days across footprint

Extensible platform will support a wide range of services

Lower opex through centralised device configuration, software updates and inventory management

¹ Revenue and fibre figures include Earthlink and Broadview acquisitions.

Business challenges and key business drivers

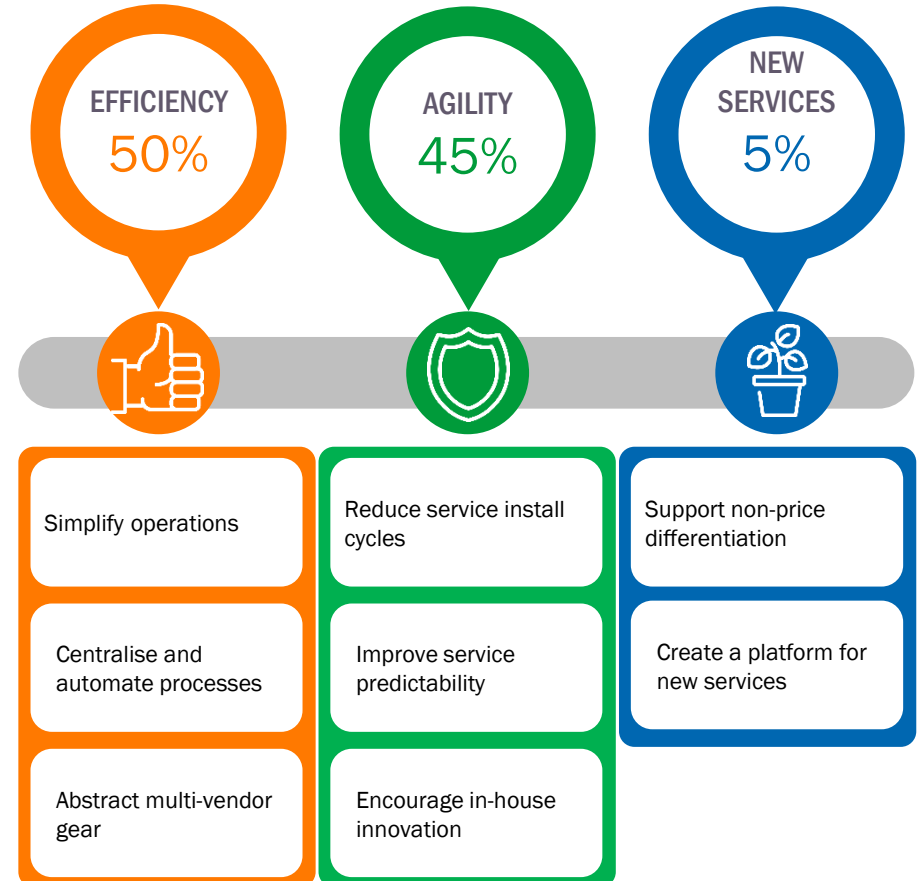
Windstream is competing in an increasingly challenging environment characterised by consolidation of its wholesale customers and increasing competition from cable, wireless and other fixed carriers for its consumer and business customers.

Windstream's acquisition-based growth strategy has had the downside of creating gaps and complexity in service delivery. It also burdens operating costs with the maintenance of multiple home-grown automation systems; the support of too many manual processes for too many disparate device operating systems and their related OSS; and inaccurate network inventory systems.

Together, these operational limitations were impeding the company's ability to drive growth and meet customer expectations for service availability and performance. Service turn-up times, success rates and configuration migrations were negatively affected by this inefficient environment. Windstream was unable to accurately schedule and meet service installation times.

Windstream needed to fix the service agility and support gaps created by its wide array of network element types and associated OSS while also taking advantage of new technologies that could help it automate the service lifecycle of its packet and optical infrastructure, which is the basis of its wholesale and enterprise services offerings. A new network approach could also allow non-price differentiation and rapid introduction of new services.

Figure 1: Business emphasis of Windstream's network automation project



Source: Analysys Mason

Analysis – Windstream’s SDN-based network automation project allows it to radically reform B2B service processes, reshape customer experience

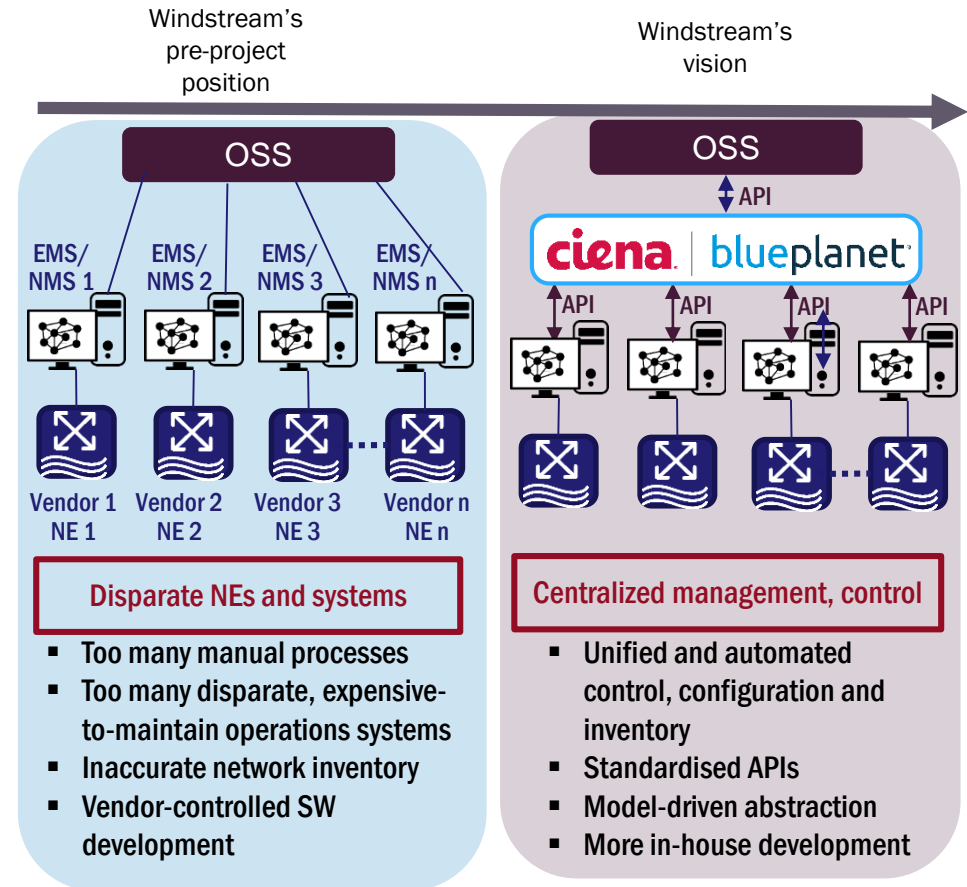
Blue Planet-managed SDN allows Windstream to significantly reduce service cycles, starting with its new Software Defined Network Orchestrated Waves (SDNow) wholesale transport services. The operator can now provision 10G wavelength services in a maximum of 20 days.

But more importantly for Windstream’s competitiveness, it now has the means to significantly improve its B2B service cost efficiency and service launch agility by abstracting the operational complexity created by its heterogeneous network footprint.

Centralized, software-driven processes enabled by the Ciena Blue Planet platform are a crucial element of Windstream’s network and service operations reform. The platform’s support for centralized inventory control and for remote mass-configuration and software update of its broad array of network devices from multiple vendors will drastically simplify and cost-reduce its operations.

10G customers should immediately see bandwidth availability improvements. The extensibility of the platform will allow Windstream to quickly launch additional enhanced wholesale service, then extend improved service automation to on-demand packet-optical enterprise services. Further, because the platform is model-driven rather than hard-coded, Windstream can innovate on its own without direct Ciena support.

Figure 2: Comparison of Windstream’s network operations before and after the SDN project



Source: Analysys Mason

Key benefits

1

Improved operational agility and customer experience

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Much shorter and more predictable availability of 10G wavelength services; Windstream can for the first time guarantee 20-day service across its entire US footprint. Blue Planet's modern model- and DevOps-based approach can also allow Windstream's technical staff to directly add new devices and services without having to depend on Ciena's development cycles.

2

Improved cost efficiency

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The Ciena Blue Planet automation overlay abstracts the complexity of the underlying multi-vendor packet-optical network infrastructure and over time will drastically reduce the operating costs of maintaining many automation systems, manual processes, inventory systems and device configuration and operating systems.

3

A platform for future service innovation

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Windstream has taken its first step towards its vision of a fully SDN-based network that decouples customer services from network devices. With Ciena's Blue Planet platform in place, Windstream can launch additional wholesale and business packet-optical services. It can also extend its programmable network to the access edge and create software-defined access services for consumers.

FURTHER INFORMATION

Solution approach [1]: RFI to simplify operations by replacing a “bloated” high-touch provisioning model with a real-time, automated approach

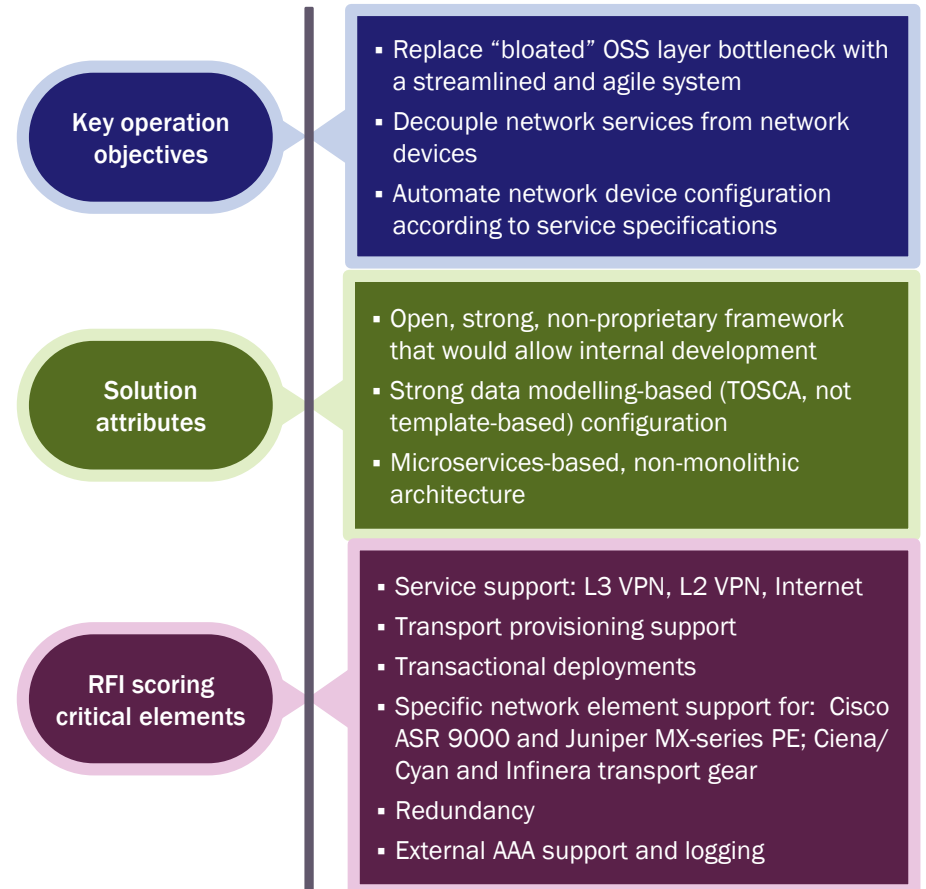
Windstream’s overarching goal with its deployment of a unified network automation platform is to increase service velocity and improve network reliability through automation.

Windstream engaged in a comprehensive RFI-based selection process with 15 companies ranging across NEPs, ISV/SIs and start-ups specialising in software-centric solutions. It evaluated the companies’ solutions against 76 specific scoring attributes across 8 weighted categories from service abstraction to price.

The company selected Ciena’s Blue Planet solution from the RFI short list after a complete lab evaluation as it supplied the orchestration and automation capabilities that best met its requirements. The project’s initial goal focused on accelerating time to market for layer 1 transport services. Enabling compliance and central control for inventory, network configuration and software updates were key to automating manual processes and increasing network reliability and agility to improve time to market. The Blue Planet platform’s unified APIs for customer service provisioning and abstraction of the underlying network technology are critical to simplifying multi-vendor operations.

By picking a solution with a strong DevOps framework and one based on data model-driven configuration and a microservices architecture, Windstream wanted to spur internal groups to innovate on new services rather than depend on vendors.

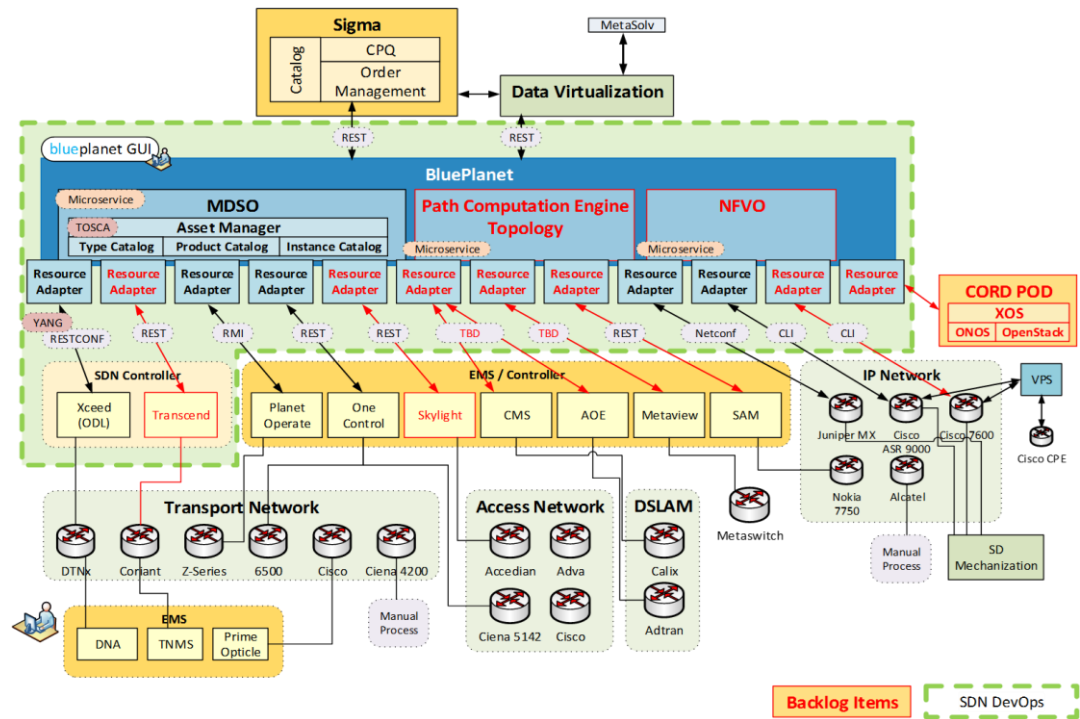
Figure 3: Windstream network automation objectives, solution attributes and critical scoring elements



Source: Analysys Mason

Solution approach [2]: Ciena’s Blue Planet platform automates the packet-optical network, could extend to other domains

Figure 4: Windstream’s programmable network architecture

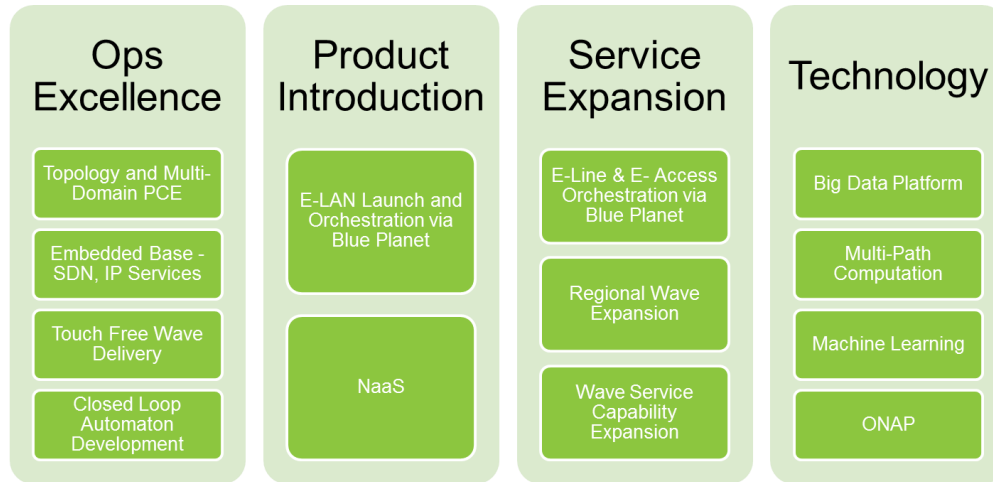


Source: Windstream

In Windstream’s architecture, the Blue Planet platform provides the overall management and configuration of the packet-optical infrastructure. The initial customer services focus is on transport services, but the company has a roadmap to extend the architecture to support wholesale Ethernet services, then enterprise services and, ultimately, consumer services (see next several slides).

Benefits achieved and expected [1]: A leap in service velocity and a platform around which to build its cloud and connectivity roadmap

Figure 5: Windstream's SDN 2018-2019 product and technology roadmap – cloud and connectivity



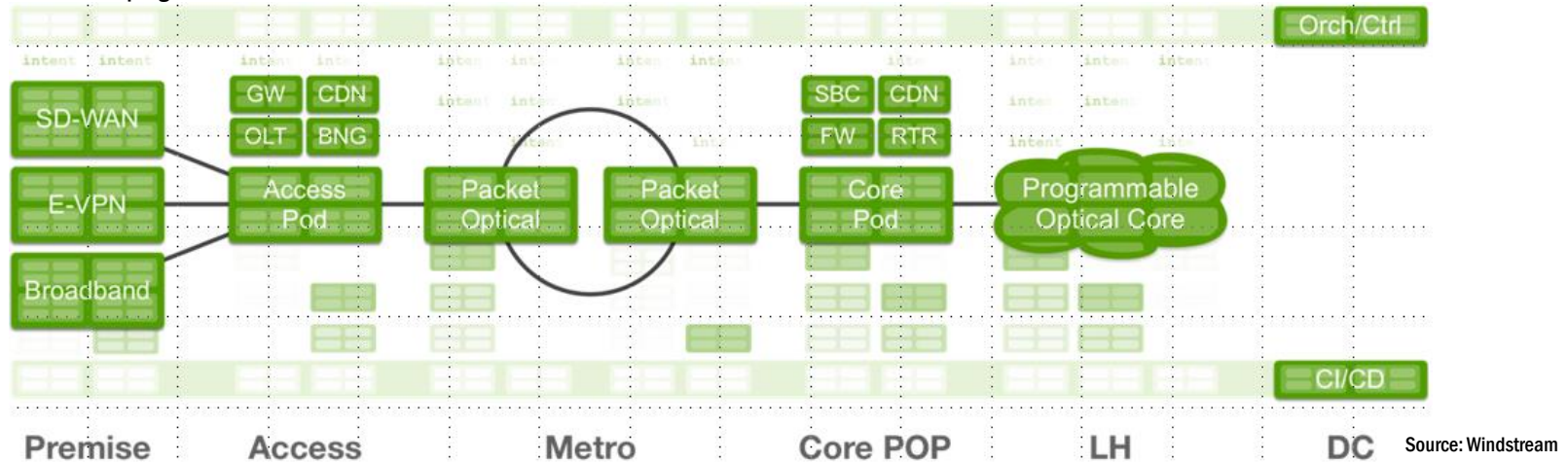
Source: Windstream

Windstream is taking a phased approach in its endeavour to transform its network. The initial implementation stage has focused on SDN-powering wholesale 10G wavelength services, Software Defined Network Orchestrated Waves (SDNow). Reduced service installation intervals through SDN-based automated provisioning capabilities enable Windstream to accelerate the delivery of managed wavelength services to its customers. The operator can now provision 10G wavelength services in 20 days.

Using a DevOps approach to automate the foundation of its network will allow Windstream to add automation of Layer 2/3 equipment and adopt a continuous cycle of new product launches. It has planned launches through 2019. It will focus on continuing to be a technology leader using new technologies such as NFV/SDN. Its 2-year roadmap will balance providing new products, operational improvement, existing service expansion and technology enablement using new tools such as Ciena's Blue Planet Intelligent Automation Platform to enhance its market position.

Benefits achieved and expected [2]: Windstream's programmable network extends from the customer premises to the data centre

Figure 6: Windstream's ultimate programmable network vision



Windstream commends the support that Ciena provided in helping it move from a typical siloed, vendor/SI-delivered and planning-focused process based on a waterfall method to a collaborative DevOps-based, continuous development and release process focused on results.

The first stage of the project execution centred around automation and orchestration of its optical network to support wavelength services in select markets; subsequent expansions will add multi-layer/multi domain carrier Ethernet services for wholesale and enterprise services, and differentiated SD WAN offers incorporating universal CPE (uCPE) and service chaining. Next, Windstream will incorporate central office re-architected as a data center (CORD) or CORD-like infrastructure at the edge for software-defined access services. Windstream expects to compress cost and time to deploy consumer broadband network by 50% by extending its programmable network to the access edge.

Windstream wants to make its networks more accessible to customers through what it calls intent-based interactions: customers, on demand, will be able to make requests and not have to worry about all the technical complexity behind their requests. Customer interactions will be translated into resources that need to be configured by the programmable network.

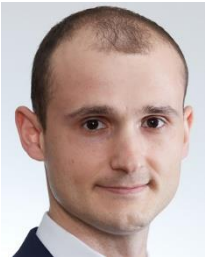
Further reading

Type	Title	Author(s)	Link
Case study	SD-WAN pioneer MetTel used VeloCloud to give businesses more choice and better performance	Dana Cooperson	www.analysismason.com/SD-WAN-MetTel-VeloCloud-RMA07
Strategy Report	Defining the digital network and operations platform for 5G and future networks	Caroline Chappell	www.analysismason.com/defining-dnop-5g-rma16
Strategy Report	Software-defined networking (SDN) in the WAN: solution options and vendor opportunities	Caroline Chappell Dana Cooperson	www.analysismason.com/sdn-wan-strategy-mar2017
Strategy Report	Cloud-native architecture for CSPs: big efficiency and speed gains, but development challenges remain	Caroline Chappell John Abraham	www.analysismason.com/cloud-native-architecture-mar2017
Strategy Report	Software-defined networking (SDN) in Asia-Pacific: Case studies of operator deployments	Gorkem Yigit	www.analysismason.com/sdn-apac-deployments-oct2016
Case study	Ciena Blue Planet: network orchestration and management	Dana Cooperson	www.analysismason.com/cyan-blue-planet-scn-profile-nov2014
Forecast	North America telecoms market: trends and forecasts 2017 – 2022	Roman Orvisky	www.analysismason.com/na-telecoms-forecast-2017-rddj0

About the authors



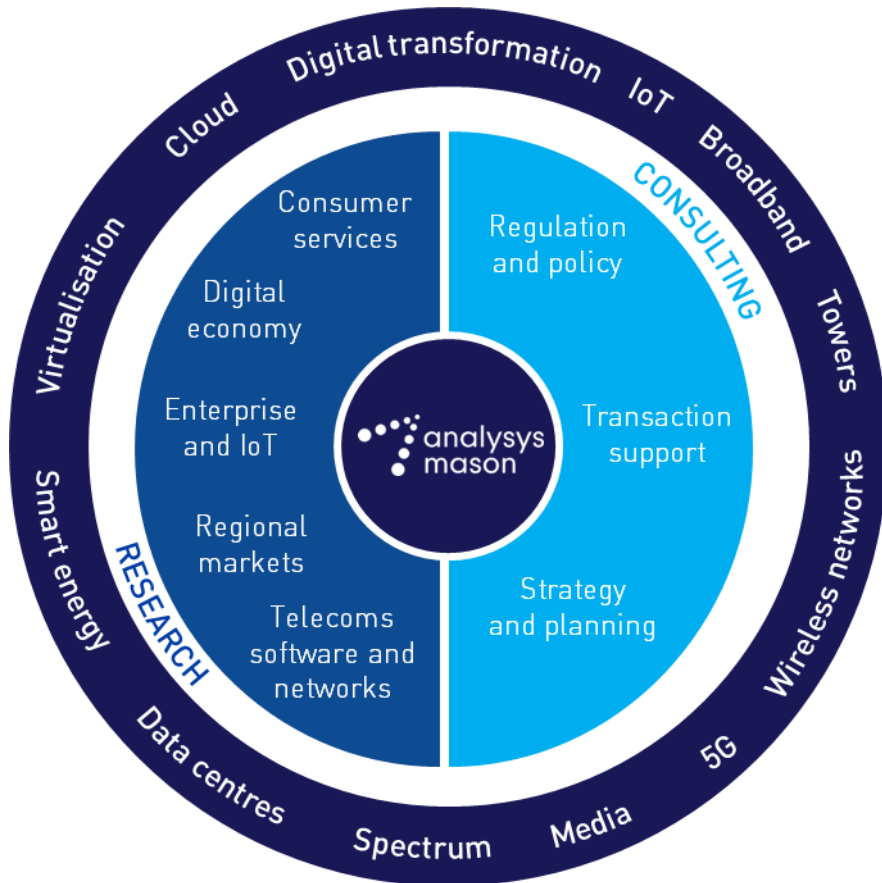
Dana Cooperson (Research Director) is the research director for Analysys Mason's network-focused software research programmes. Her area of expertise is intelligent fixed and mobile network infrastructure. Her goal is to help customers strengthen their link in the communications value chain while evolving their business operations to benefit from, rather than be threatened by, shifts in the market. The key network infrastructure trends Dana focuses on include the integration of communications and IT assets and the drive towards software-controlled, virtual networking.



Don Alusha (Research Analyst) is part of the OSS practice in Analysys Mason's Telecoms Software Research team, contributing to the *Service Delivery Platforms*, *Service Assurance*, *Service Fulfilment* and *Software-Controlled Networking* research programmes. His areas of interest include computer and network security, the digitalisation of communications service providers' (CSPs') systems, and the evolution of software architecture in cloud computing deployments. He holds an MSc with Distinction in Computing, IT Law and Management from King's College London, and a first-class honours BSc degree in Business Computing Systems from City, University of London.

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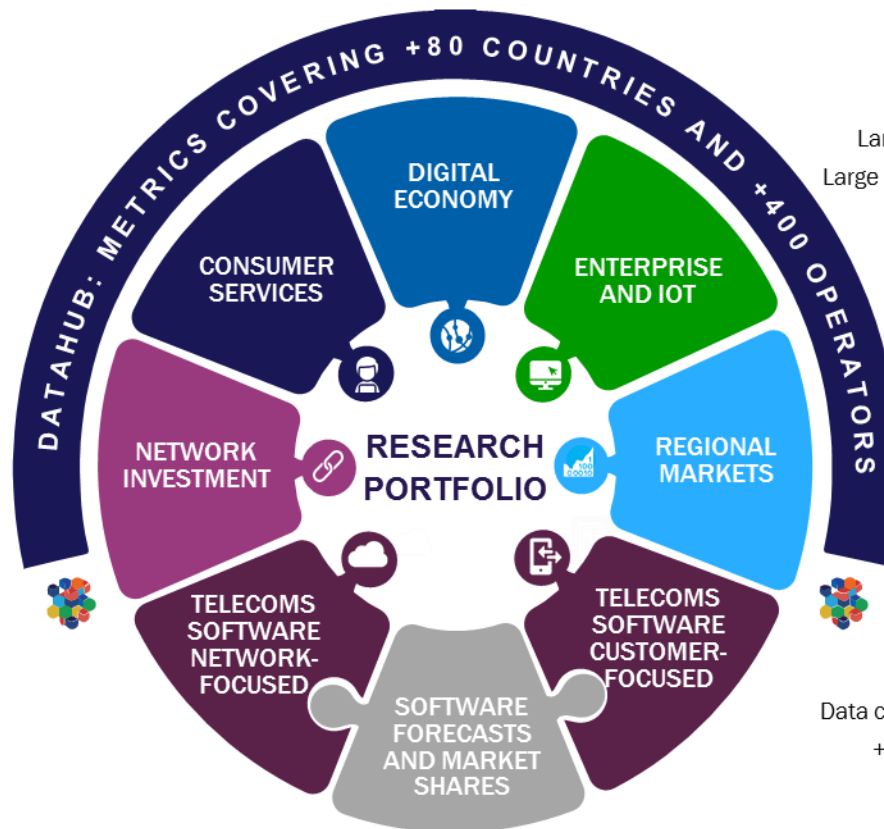
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Enterprise and IoT programmes

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- Large Enterprise Emerging Service Opportunities
- SME Strategies
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Regional markets programmes

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- European Country Reports



DataHub

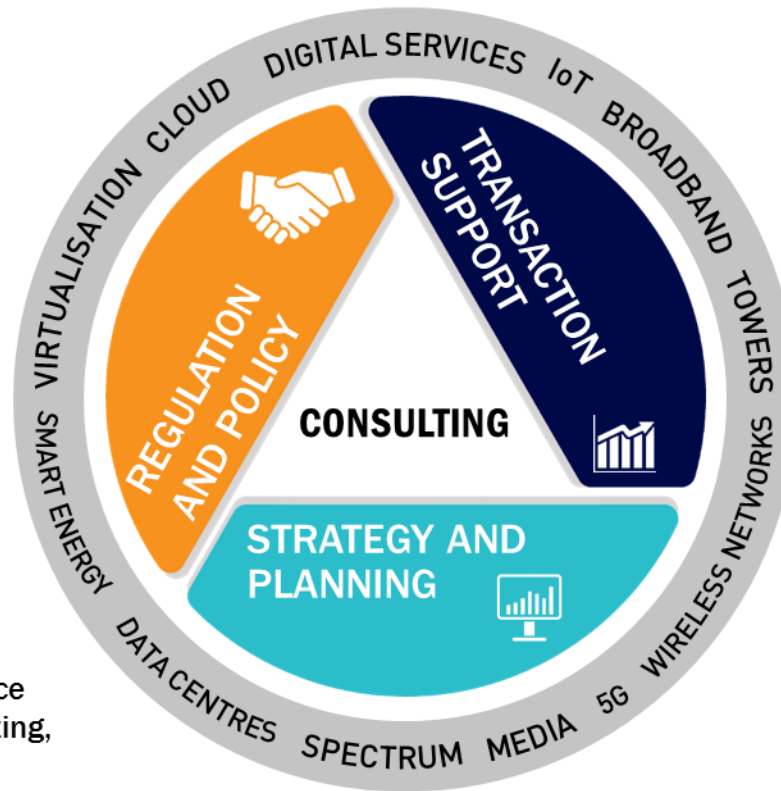
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