



Digital infrastructure: worldwide forecast 2018– 2022



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About this report

This report provides forecasts for communications service provider (CSP) spending on digital infrastructure products and related services for 2018–2022. It provides details on spending by delivery type, sub-segment and region. The report also provides recommendations for how vendors and CSPs can improve their approach to digital infrastructure adoption.

The report is based on several sources, including:

- Analysys Mason's research from the past year
- interviews with CSPs and vendors worldwide.

KEY QUESTIONS ANSWERED IN THIS REPORT

- What are the key trends and factors that will affect the digital infrastructure market during 2018–2022?
- What are the growth rates in each of the sub-segments?
- What are the regional factors that will drive growth?
- What should vendors do to exploit new business opportunities?
- How will professional services for digital infrastructure segments perform during the forecast period?
- What are the major drivers and inhibitors that will influence CSP spending on digital infrastructure?

GEOGRAPHICAL COVERAGE

- Worldwide
- Central and Eastern Europe
- Developed Asia–Pacific
- Emerging Asia–Pacific
- Latin America
- Middle East and North Africa
- North America
- Sub-Saharan Africa
- Western Europe

SUB-SEGMENT COVERAGE

- Digital infrastructure software
- Digital infrastructure hardware
- Digital infrastructure professional services
- Virtual network function products
- NFVI products and services
- SDN products and services
- Cloud computing products and services

WHO SHOULD READ THIS REPORT

- Vendor strategy teams that need to understand how spending is shifting from integrated NFV stacks to common NFV infrastructures and cloud native components.
- Product management teams responsible for feature functionality and geographical focus, and product marketing teams responsible for growth.
- CSPs that are planning network function virtualisation (NFV)/software-defined networking (SDN) and cloud computing transformation journeys and want to ensure that they remain up to date.
- Professional services vendors that want to understand the growth opportunities over the next 5 years.

Three key trends expected during 2018–2022

1

End-to-end NFV infrastructure that runs VNFs from multiple vendors across domains will begin to take hold.

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CSPs are increasingly realising that they need to put common infrastructure (NFVI) in place to extract the maximum benefit from NFV. This should span lines of business and join up the islands of NFV that many have installed so far. This end-to-end platform goal is more difficult to achieve than implementing individual VNFs, but it will lead to a more-extensive digital transformation than is possible from replacing physical functions with virtual ones.

2

CSPs will start to implement cloud-native digital infrastructure in earnest to prepare for 5G.

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The cloud-native approach to NFV, which CSPs have been pushing for some years, is becoming more mature. Containerisation of OpenStack and other key cloud components will enable operators to deploy cloud-native NFVIs and the availability of cloud-native VNFs will rise, especially in the evolved packet/common core domains for IoT/5G roll-outs, respectively. New virtual CPE deployments are also a key target for cloud-native technologies.

3

CSPs will expect solutions to be productised and will use professional services sparingly for niche activities.

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CSPs are realising that there is a need for rationalisation and standardisation across their businesses and are attacking their professional services bills from two directions. Leading-edge CSPs will become more capable in software and systems integration and are outsourcing well-scoped tasks to PS organisations. Market followers will demand productised solutions with minimum customisation to reduce cost.

Recommendations for CSPs



1

CSPs should address cultural and organisational change if they want to fully exploit the benefits of NFV and the automation associated with WAN SDN.

The technologies associated with NFV and SDN are maturing (with the exception of cloud-native software) and CSPs are poised to scale up deployments. CSPs want to take advantage of productised WAN SDN and NFV solutions. However, for the market to progress, CSPs need to transform cultures and organisations, by acquiring the right skills and changing processes and structures. This may require professional services support.



2

CSPs should redouble efforts to understand and deploy cloud-native NFV, especially given the dependency of new 5G service opportunities on both digital infrastructure and New Radio capacity gains.

Cloud-native NFV is immature, but alternative service providers and leading operators such as AT&T are already deploying cloud-native infrastructure and VNFs. Cloud-native technology is key if 5G is to support new services and deliver the agility and cost transformation that is promised. CSPs should have cloud-native SDN and NFV in their roadmaps and should start investigating their implications sooner rather than later.



3

CSPs should accelerate the development and deployment of a horizontal NFVI instead of continuing to acquire NFV technologies in a piecemeal, vendor-specific fashion.

The majority of CSP NFV deployments to date are ‘virtual appliances’, where VNF functions are tightly integrated with vendor-specific NFVIs. It is becoming increasingly clear that CSPs need to invest in a common NFVI that can support any VNF in any given operator location in order to drive down cost and be strategically prepared for a 5G future. This is a complex task that will require organisational change, new processes and integration support.

Recommendations for vendors



1

NFV vendors should be prepared for a big CSP push towards the disaggregation of digital infrastructure, especially of VNFs from NFVI and other supporting software and hardware.

Vendors will increasingly be required to live in a componentised world and will need to co-exist in ecosystems with other vendors of disaggregated components. VNF vendors with tightly integrated NFVIs will lose out to NFVI suppliers with horizontal platforms unless they can disaggregate their functions. SDN vendors will need to be able to work in an open networking world. Using open-source software as the base for vendor products will be key.



2

Vendors should play a more active role in developing cloud-native NFV and cloud computing, and readying it for CSP use cases.

Vendors need to help push CSPs towards adopting cloud-native technologies to accelerate the realisation of 5G. This means that they must provide cloud-native versions of products and actively contribute to cloud-native open-source organisations to ensure that key cloud-native components are ready for telecoms market consumption. Where possible, vendors should facilitate crossover learning between CSPs' cloud and network organisations.



3

Vendors should push automation and service agility messages and back these up with productised WAN SDN/DC SDN solutions.

SDN vendors should feed CSPs' newly urgent interest in automation with productised solutions that help them to manage and control their connectivity in an agile and easy-to-consume manner. WAN SDN solutions will be particularly sought after, but there are different architectural approaches, which may lead to market confusion and fragmentation. Vendors will need to work hard to overcome these challenges using clear messaging.



Contents



Executive summary

Recommendations

Forecast

Market drivers and inhibitors

Business environment

Market definition

About the authors and Analysys Mason

About the authors



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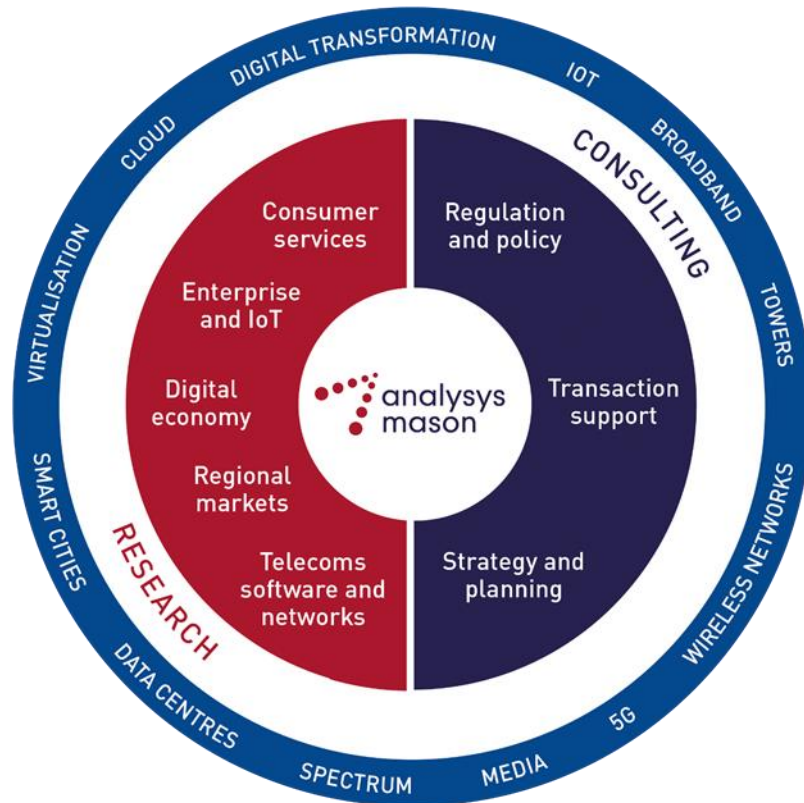
Caroline Chappell (Research Director) is the lead analyst for Analysys Mason's *Digital Infrastructure Strategies* research programme. Her research focuses on service provider adoption of cloud and the application of cloud technologies to fixed and mobile networks. She is a leading exponent of SDN and NFV and the potential that these technologies have to enhance business agility and enable new revenue opportunities for service providers. Caroline investigates key cloud and network virtualisation challenges, and helps telecoms customers to devise strategies that mitigate the disruptive effects of cloud and support a smooth transition to the era of software-controlled networks. Caroline has over 25 years' experience as a telecoms software analyst and consultant.



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.

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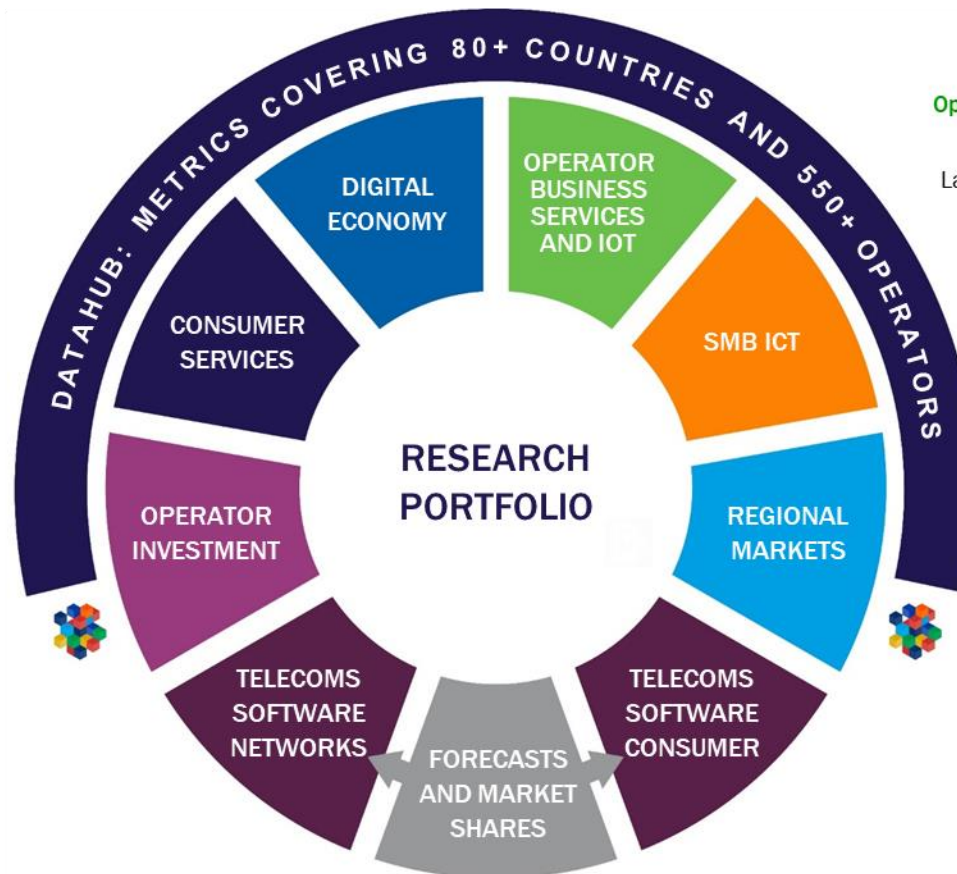
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- New digital frontiers



PUBLISHED BY ANALYSYS MASON LIMITED IN JANUARY 2019

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