

SUBMARINE NETWORK NEEDS FOR THE NEXT GENERATION

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Introduction

I am pleased to present this compilation of articles from Analysys Mason covering some of the key topics that are featuring at Submarine Networks Europe.

The telecommunications industry continues to evolve and change, presenting both challenges and opportunities for key stakeholders. In this series of articles we discuss:

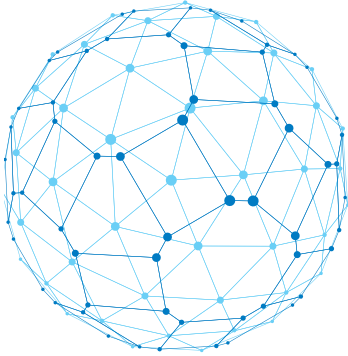
- how the growth and dominance of content providers is influencing investment in the industry and where the next wave of investment may come from
- the influence of web-scale companies as they set the software-defined networking (SDN) agenda and where this is leading
- the impact of digital transformation and the potential rewards for the telecoms sector as a whole
- what operators are doing to take advantage of the growth trend in the cloud market.

As a sector specialist in telecoms, media and technology Analysys Mason is active advising clients across Europe on the above topics. Our clients include operators, investors, regulators and governments.

I hope you find these articles of interest. We welcome your feedback and encourage you to contact the authors directly if you would like to discuss any of the points they have raised, or if you would like to understand how a specific issue or trend might affect your organisation.



PATRICK KIDNEY
Principal, Consulting
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Analysys Mason's top 10 predictions for the telecoms media and digital services sectors in 2018

1. Specialist mobile virtual network operators (MVNOs) will continue to surprise the IoT market by signing major deals.
2. Revenue growth from new enterprise services will offset losses in traditional enterprise revenue.
3. Digital transformation will shift from offering new digital services to transforming labour costs in established networks.
4. Operators that provide digital methods for customer acquisition and support will win market share from those that lag.
5. Service-specific and unlimited data tariffs will win out over volume-based pricing as the foundation for consumer mobile services.
6. Growth in consumer spending on OTT video services will outpace traditional pay-TV spending in 2018.
7. Operators will deploy Alexa-like AI techniques to engage customers in a more-digital manner.
8. A small number of 5G New Radio (NR) trials will start in 2018, but 90% of operators will wait until after 2020.
9. The mainstream telecoms market is embracing virtual networks. By 2018, more than USD6 billion in capex will have shifted to virtualised and cloud-based networks; this shift will grow to more than USD50 billion in 2022.
10. Operators will begin to deploy NGPON-2 as a converged infrastructure to support 5G, FTTP and enterprise services.

For additional detail around each prediction, download our free predictions paper at [analysismason.com/top-10-predictions-2018/](https://www.analysismason.com/top-10-predictions-2018/)

The submarine cable industry: new investment opportunities and key trends



PATRICK KIDNEY
Principal, Consulting

“The submarine cable industry has changed structurally and international bandwidth use continues to soar.”

Changes in the submarine cable industry over the last 10 years

After nearly a decade of limited investment in submarine cables, the last few years have seen a marked increase in the number of new cables all over the world. Over 50 new systems have been completed or are under construction, and another 35 systems are planned for completion before 2022. In parallel, the submarine cable industry has changed structurally and international bandwidth use continues to soar. This article considers the impact of these changes on global submarine cable developments and investment over the next 5 to 10 years.

Global international bandwidth grew by over 40% per annum from 2012 to 2016, according to TeleGeography. Traditional industry players, including wholesale Internet and voice operators, have experienced an impressive growth in traffic, but it is the entrance of the content and cloud providers that has had the biggest impact on the industry. Companies such as Amazon, Apple, Facebook, Google and Microsoft are responsible for approximately 70% of this growth, according to Cisco, and it is these companies who are influencing much of the investment in new cables.

These content and cloud providers use the international cable infrastructure to distribute their content via servers located in data centres closer to the consumers of the content, thereby enhancing the experience of the Internet user.

The networks interconnecting data centres are private content distribution networks (CDNs); private (and to an extent) open CDNs have been a driver of structural change in the industry over the last 10 years. The data centres that form part of the CDNs are globally distributed (see Figure 1 below).

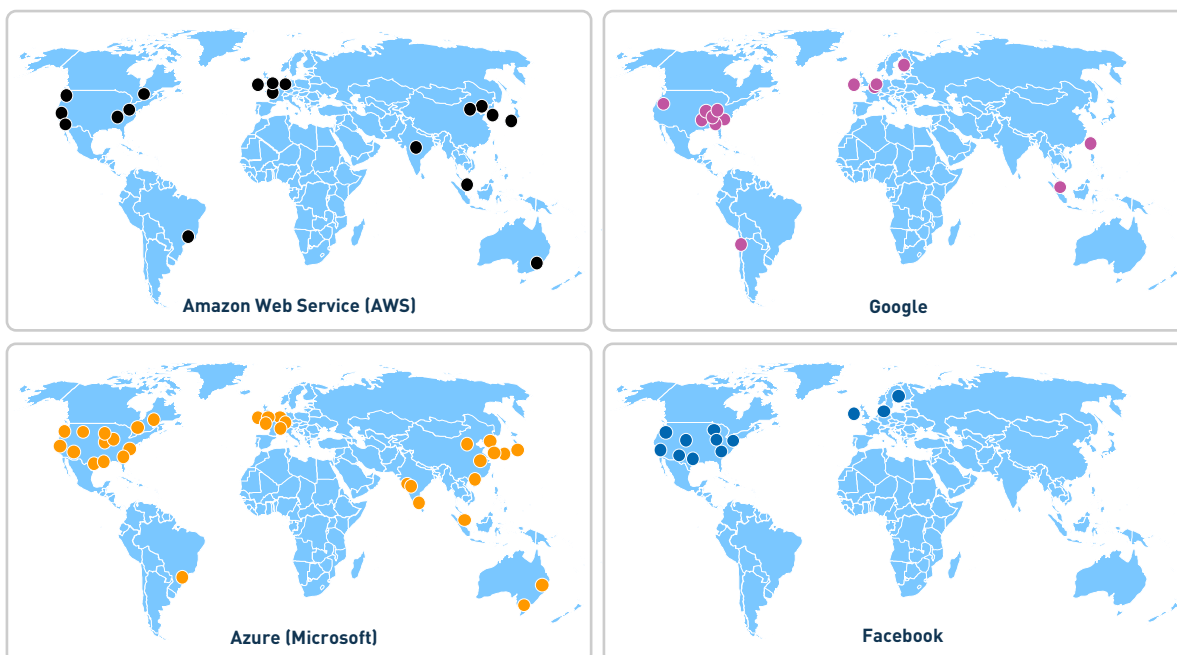


FIGURE 1: SAMPLE OF CONTENT PROVIDERS' GLOBAL DATA CENTRES
[SOURCE: ANALYSYS MASON, AMAZON, FACEBOOK, GOOGLE AND MICROSOFT, 2018]

The requirement to interconnect these data centres means that content and cloud providers are:

- dictating the submarine cable routes; for example, the transatlantic MAREA cable connects two unique landing station sites in Bilbao, Spain and Virginia Beach, USA
- underwriting project demand risks by committing to use dark-fibre pairs on the system before construction, or by paying for the right of use in the early days of the project
- becoming co-owners and investors in new cables (such as the MAREA cable system noted above and the Pacific Light Cable Network (PLCN)).

The availability requirements of the content providers, cloud providers and traditional industry players in general have led to expanding requirements for diversity and redundancy, which have been a driver for some of the new investment. The impact of outages on businesses, and the practical constraints on rapid repair mean that alternative routes to interconnect the same locations are required, which in turn has led to alternative cables being laid.

The presence of terrestrial diverse dark fibre from the landing point inland to data centres or Internet exchanges is another requirement that is partially driven by content and cloud providers taking full dark-fibre pairs on the submarine cables.

Factors that will impact investment over the next 5 to 10 years

The requirements of content and cloud providers will continue to shape the industry over the coming years, particularly in larger trans-ocean projects. As illustrated in Figure 1, the global data centre footprints are extensive, though large parts of the world are not yet served by these CDNs. As the local geographical market evolves, content providers may require further connectivity. Africa, for example, is largely underserved by global CDNs, and as Internet penetration and traffic per user increase, the CDNs will need to expand.

Submarine systems occasionally suffer disruption through accidental cable cuts and damage from, for example, anchors, fishing or seismic activity. Content providers and some other corporate customers typically require at least three different sea routes meaning that providing route diversity will remain a key driver for investment in new cables.

Commentators have highlighted the possible vulnerability of cable networks to sabotage with a consequent impact on national economies in recent months. These security concerns could result in an increase in government funding or other support for further diversity.

Where investment might materialise in the coming years

There are over 35 announced plans for the completion of cable systems in the public domain, and others are in the pipeline (even if some will be cancelled or delayed). Investment will be used in a variety of schemes, including the following.

- Replacement of older cables, although the upgrade of these systems to 100G systems will keep them in service for longer.
- Diversification of cables for resilience and security. Physically diverse routes are a requirement for most users and are especially important for CDNs.
- Development of shorter routes and more regional systems where markets are under-served (thin routes). These will help to increase the availability of inter-data centre connectivity when combined with terrestrial networks.
- Generation of new trans-ocean routes, which will largely be driven by the CDNs of the Internet giants and their strategies for those parts of the globe that they are not currently addressing.

Analysys Mason has extensive experience advising investors, governments and public bodies on the commercial and technical aspects of submarine cables, data centres and the Internet generally.



Questions?

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SDN in the WAN: the open programmable user plane could kickstart a new era

“2018 promises to be a disruptive year for SDN technologies. Web-scale companies are increasing their influence in both WANs and data centre networking.”



CAROLINE CHAPPELL-
Principal Analyst, Research




Established router players need to boost innovation to beat off competition from an expanding open-source SDN ecosystem, now taking programmability to the user plane. It is early days for this ecosystem, but operators and vendors risk losing influence in another key area of the network if they leave the development of an open programmable forwarding plane entirely to web-scale companies.

Web-scale companies strengthen their influence on the future network

The FANG and BAT companies are driving the pace of change in networking technologies.¹ At Nokia's analyst event in Helsinki in December 2017, Basil Alwan, president of Nokia's IP and Optical Networks division, pronounced that the "Internet is changing owners" as web-scale companies invest in augmenting it to support the massive volumes of cloud and content traffic that they generate. Alwan pointed out that Nokia is seeing less traffic on operator backbones than on web-scale networks. As a result, the web-scalers are putting new demands on Nokia to provide SDN-based automation, equipment telemetry data, open APIs, analytics and unprecedented core router performance. The subtext to Alwan's presentation was that unless Nokia meets these demands, the web-scalers will build next-generation, SDN-based networking equipment for themselves, a capability that many in the telecoms industry believe such companies could master if they decide it is worth their while.

The FANGs, and particularly Google, are influencing network protocols too. Between 15% and 20% of worldwide network traffic is now estimated to use user datagram protocol (UDP). UDP, Google-developed QUIC and HTTP/2 are being promoted as a key protocol stack for 5G and a possible replacement for deeply flawed TCP/IP. Whichever set of IETF transport protocols wins, the Internet will carry an increasing share of enterprise traffic. In operator networks, there are early signs that MPLS is in retreat, threatened not only by SD-WANs but also by enthusiastic operator adoption of segment routing. Deutsche Telekom's radical IPv6-based pan-European network (Pan-Net) stripped MPLS out entirely, while other operators implement segment routing as a centralised and improved traffic engineering capability in tandem with MPLS. Nevertheless, the migration path to pure IPv6 segment routing (SR6) is increasingly well-trodden. It remains to be seen how far this shift to the Internet will favour the FANGs and BATs as future suppliers of enterprise connectivity, especially if they control more Internet infrastructure.



The FANGs and BATs have had the largest impact on data centre networking, adopting open-source technologies and championing white boxes with merchant silicon for data centre switching. Data centre switching and WAN routing remain separate domains today, but cloud, NFV and emerging 5G use cases increasingly demand seamless connectivity across both. Alwan hinted that routers and switches may 'blend' in the future, driven by new chipset designs and the future architecture of the 5G network. Carrier 5G networks will increasingly resemble the web-scalers' in their dependence on cloud data centres, although operators will probably run many more cloud data centres, massively distributed across the network edge, whereas web-scalers rely on massively centralised DCs.

An open programmable user plane is the latest challenge to the WAN status quo

White box routing – or native SDN as we call it² – has not caught on in the WAN due to operator antipathy to OpenFlow and existing investment in router infrastructure. As operators invest in a new, edge-based cloud network, this could change. Operators could choose to build such a network based, for example, on switches powered by new generations of powerful ASICs from the likes of Barefoot Networks or Broadcom, rather than on traditional routers with proprietary network processors.

Barefoot's Tofino chip supports the P4 programming language for packet processing. The P4 runtime, regarded as a successor to OpenFlow, gives users unprecedented software-based control over the data plane, enabling them to match the flexibility that SDN vendors have been building into their control planes. Tofino's price/performance raises the prospect of an affordable, programmable forwarding plane, which could revolutionise networking, reducing the power of vendors that base their gear on fixed-function network processors and encouraging the ecosystem-based development of new value-added network capabilities in the areas of security, telemetry and middlebox replacement.

AT&T has implemented Tofino in its data centres; Google and Tencent are Barefoot investors. Sharp-eyed conference-goers will have spotted that the Telstra Programmable Network³ uses Noviflow's network operating system (NOS), which Noviflow touts as the first carrier-grade NOS to run on Tofino-based switches. But most operators are not ready for the programmable user plane revolution. Web-scale companies are pushing for software-based disaggregation of the networking value chain to drive out cost and accelerate innovation, but many operators argue that vendor-based aggregation is the more cost-efficient path based on extensive experience. A programmable user plane may introduce more performance and security issues than it solves and there is little evidence that customers would be better served by an ability to rapidly introduce new network protocols.

Established network equipment vendors should nevertheless respond to this latest SDN development. The forwarding plane will become a key SDN battleground in 2018 and a focus for 5G end-to-end network architecture. Vendors should tell a strong story to justify their chipset, NOS and aggregation strategies. Operators should assess the benefits, impact and challenges of the programmable forwarding plane as they plan new edge-based cloud networks that will affect the future architecture of the WAN. They should also evaluate AT&T's end-of-2017 proposal to bridge fragmented SDN approaches in the data centre/WAN with an open-source disaggregated network operating system (dNOS) that works with multiple protocols, chipsets and SDN controllers. It is early days for a P4-based user plane ecosystem, but operators and vendors risk losing influence in another key area of the network if they leave its development entirely to the FANGs and BATs.

Questions?

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¹ FANG: Facebook, Amazon, Netflix, Google; BAT: Baidu, Alibaba, Tencent.

² For more information, see Analysys Mason's Software-defined networking in the WAN: Solution options and vendor opportunities.

³ For more information, see Analysys Mason's Telstra Enterprise demonstrates the impact of investing in digital transformation on revenue growth.

Partnering for digital transformation: a EUR15 billion opportunity for EMEA operators



DAVID ABECASSIS -
Partner, Consulting

“ Digital transformation is happening fast, and could add EUR15 billion to operators’ cash flow in EMEA by 2021.”

Where do we go next? After nearly a decade of disruption, telecoms operators in most developed and many developing markets, in Europe and elsewhere, can think again about growth. Now is the time, therefore, for operators to define how they will grow during the next business cycle.

It is clear that part, if not all, of the answer to this question lies with digital and the Internet. Telecoms operators will thrive or struggle depending on their ability to adapt or transform their strategy and operations to make the most out of the content, services and technology enabled by the Internet.

This ‘digital transformation’ takes many guises [see Figure 1]. For some operators, it means focusing on their core business, providing best-in-class connectivity for their customers to access online content and services with the best possible quality of experience. For others,

it means entering new markets, thanks to lower barriers to entry made possible by the Internet. For all, however, digital transformation also means working differently, investing differently, to make the most of the rapid pace of change in software and networking that is taking place, driven by the largest Internet players.

Operators that are trying to protect their core business will find that differentiation is a challenge

For operators that are focused on shoring up their core business, a key challenge is differentiation. On the one hand, they face competition, which in Europe remains as intense as ever in both mobile and fixed markets. How can they convince end users that they are worthy of their loyalty, rather than ‘me-too’ providers that can be joined and left every 12 to 24 months purely based on prices? On the other hand, they are also victims of their

success in launching increasingly high-quality broadband services: voice and messaging services are now add-ons to broadband access, and superfast broadband (30Mbit/s or 50Mbit/s and more) is available through both fixed and mobile networks in many countries, so most people can get entry-level broadband that is ‘good enough’ for their use. How can operators convince them to upgrade to better, but more-expensive products (including fibre-based access)?

There is no single answer, but many operators are now effectively using online content and applications as drivers of demand for connectivity, through advertising (for example, Virgin Media is promoting 200Mbit/s fibre broadband by emphasising low-latency gaming), bundling (for example, many operators are bundling Netflix with broadband and offering differentiated promotions with different tiers of broadband) and digital marketing.

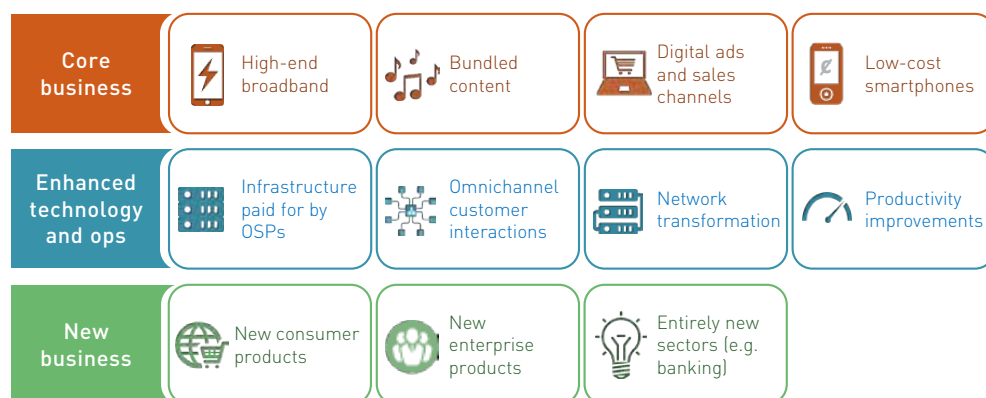


FIGURE 1: SELECTED ONGOING DIGITAL TRANSFORMATION INITIATIVES [SOURCE: ANALYSYS MASON, 2017]

Some operators are entering new markets and have many assets to help them do so

Operators that are entering new markets are experimenting in a wide range of ways. In the USA, Verizon and to a lesser extent AT&T are making large bets on new markets: digital advertising (Yahoo!, AOL), pay-TV (DirecTV) and many other acquisitions, which must be large scale to make a difference in hundred-billion-dollar businesses. In Europe, Orange has entered the retail banking market in Poland, and is preparing to launch in France. Partly this is a portfolio strategy: make a lot of bets and see what sticks.

However, the market entry strategy of most operators relies on assets that they have had all along but did not previously exploit outside telecoms: customer relationships, including billing, which make it possible to act as a payment channel for small transactions (for example, app stores); a physical presence in tens of thousands of neighbourhoods, which are fast becoming expensive advertising billboards but can also act as points of contact and service centres for many new services; and trust – although operators complain that they are being held to higher standards of data protection and privacy than other businesses, in practice this has helped them become trusted and liked by

consumers. Consumer surveys regularly value telecoms brands highly, often in the top three in many countries.¹ This is despite the fact that the telecoms industry only represents 1–3% of GDP in most developed markets.

Operators are engaged in network and operations transformations in order to reduce cost and improve performance

Finally, every operator is now engaged in a deep transformation of their networks and operations, to make the most of technology pioneered online by ‘web-scale’ online service providers. This involves making more extensive use of software and cloud platforms to increase the agility of networks and platforms. Where it once took months and millions of Euros in investment to launch a new service, dedicated hardware, virtualisation and software-defined networking (SDN) now enable operators to reallocate resources and launch new services in weeks, if not days. They are also investing in customer care platforms that enable them to interact with customers whenever, wherever and however these customers want, improving satisfaction and retention. Ultimately, the goal is to reduce costs and improve productivity – to the benefit of operators themselves, their investors and their customers.



This feels like a long and hard journey, but make no mistake: the digital transformation is happening fast, and the rewards for the telecoms sector as a whole are significant. We estimate that successful transformation, through judicious investment and partnerships, could add up to EUR15 billion to operators’ cashflow in Europe, the Middle East and Africa (EMEA) by 2021, a 50% increase on current levels (see Figure 2).

Analysys Mason recently published a report on the value of partnering for digital transformation: *Operators’ digital transformation: unlocking EUR15 billion through partnerships with OSPs*.² Other recent research on digital services and transformation includes *Telecoms operator growth strategies: case studies and analysis*.³

Questions?
 Please feel free to contact [David Abecassis, Partner, Consulting](mailto:david.abecassis@analysismason.com) at david.abecassis@analysismason.com or [Stephen Sale, Research Director, Research](mailto:stephen.sale@analysismason.com), at stephen.sale@analysismason.com

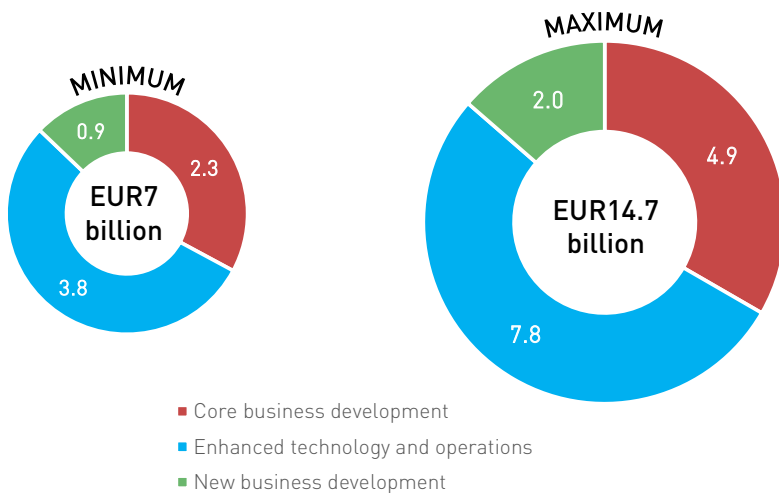


FIGURE 2: ESTIMATES OF THE CASHFLOW IMPACT OF DIGITAL TRANSFORMATION THROUGH PARTNERSHIPS, EMEA, 2021 [SOURCE: ANALYSYS MASON, 2017]

¹ For example, BrandZ ranks Vodafone as the most valuable UK brand and BT is at number four. For more information, see www.research-live.com/article/news/vodafone-uks-most-valuable-brand/id/5023372.
² See *Analysys Mason’s Operators’ digital transformation: unlocking EUR15 billion through partnerships with OSPs*. Sponsored by Google.
³ See *Analysys Mason’s Telecoms operator growth strategies: case studies and analysis*.

Telecoms operators could benefit from the growth in cloud markets that is driven by global IT players

“ Operators are well positioned for a role in delivering managed data, security and private cloud services, as well as services targeted at key industry verticals where they can differentiate themselves.”



IGOR BABIĆ
Research Analyst, Research

The market for cloud-related services continues to increase rapidly, as evidenced by the double-digit revenue growth rates enjoyed by many global IT market players. This presents both an opportunity and a challenge for telecoms operators that are seeking to capture a share of this growing market and its associated connectivity revenue.

This article compares the financial performances of cloud services from well-established global IT players with those of telecoms operators and discusses what operators are doing to take advantage of the growth trend in the cloud market. The reporting of cloud revenue is opaque – it is not always clear what is or is not included and exact comparisons are impossible. However, the reported figures give us a reasonable sense of how the different cloud divisions, broadly defined, are performing.

Alphabet, Amazon, IBM and Microsoft dominate the rapidly growing cloud market

Global IT players continue to report huge increases in year-on-year revenue for their cloud services [see Figure 1]. Microsoft Azure and Alibaba Cloud are particularly notable, with growth rates of above 90%, but many others including AWS, Google Cloud and Oracle Cloud are also growing at more than 40% year-on-year.

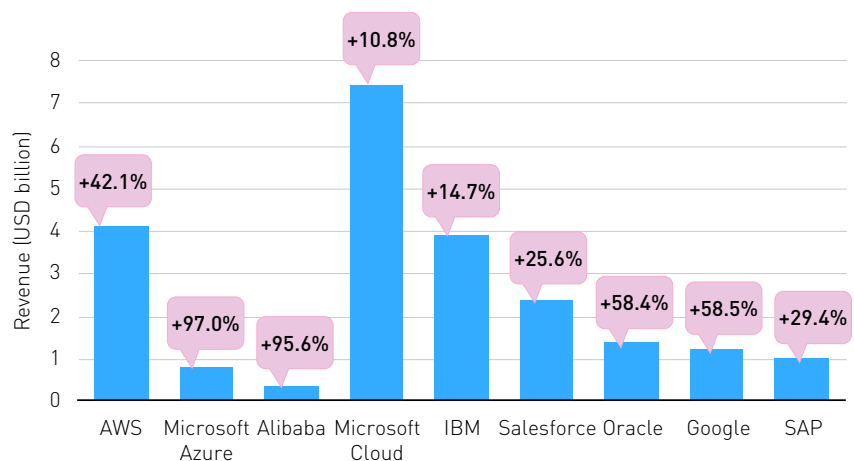
Revenue is shifting from legacy IT offerings to cloud-based services. For example, IBM Cloud’s revenue (which includes Bluemix) grew by 14.7% between 2Q 2016 and 2Q 2017 while the overall revenue for IBM Technology Services and Cloud Platforms (which includes infrastructure services, technical support services and integration software) fell by 5.1% in the same period.

The cloud market positions of the companies represented in Figure 1 can be summarised as follows.

- AWS is a strong leader in the

infrastructure-as-a-service (IaaS) market, followed by Microsoft Azure, Alibaba Cloud and Google Cloud, which are behind, but closing the gap.

- Microsoft Azure and Alibaba Cloud have outperformed their competitors by a large margin when it comes to cloud revenue year-on-year growth rates. However, this growth comes from a low base compared to that of AWS, for instance. In fact, AWS’s revenue grew by USD1.21 billion in 2Q 2017 while the combined revenue growth of Azure, Alibaba Cloud and Google Cloud was USD1.33 billion in the same period.



KEY: AWS = Amazon Web Services; Alibaba = Alibaba Cloud; IBM = IBM Cloud; Salesforce = Salesforce Cloud Subscription and Support; Oracle = Oracle Cloud; Google = Google Cloud; SAP = SAP Cloud Subscriptions and Support.

FIGURE 1: CLOUD REVENUE AND YEAR-ON-YEAR GROWTH, BY GLOBAL IT PLAYER, 2Q 2017¹
[SOURCE: ANALYSYS MASON, 2017]

- Alphabet reported that its cloud unit accounted for more of the company's headcount additions than any other areas of the business in 2Q 2017 and that the unit is one of Alphabet's fastest growing businesses. Further inclusion of artificial intelligence services in Google Cloud is its potential key differentiator in the cloud market in the future.
- Alibaba Cloud's biggest market is China, where the market for cloud computing services is still a few years behind the USA and Western Europe. This, along with other less developed cloud markets, such as India and Indonesia, is where the company sees its chance to capture further revenue growth and gradually catch up with its competitors in IaaS. Alibaba Cloud is one of the conglomerate's fastest growing units and it is focusing on growth and international expansion, rather than profitability.
- IBM is not within the top-five companies by revenue in the IaaS market – it makes most of its cloud revenue from software-as-a-service (SaaS) and platform-as-a-service (PaaS) offerings. The same is true for Oracle, Salesforce and SAP.

Some telecoms operators also report significant growth in cloud revenue

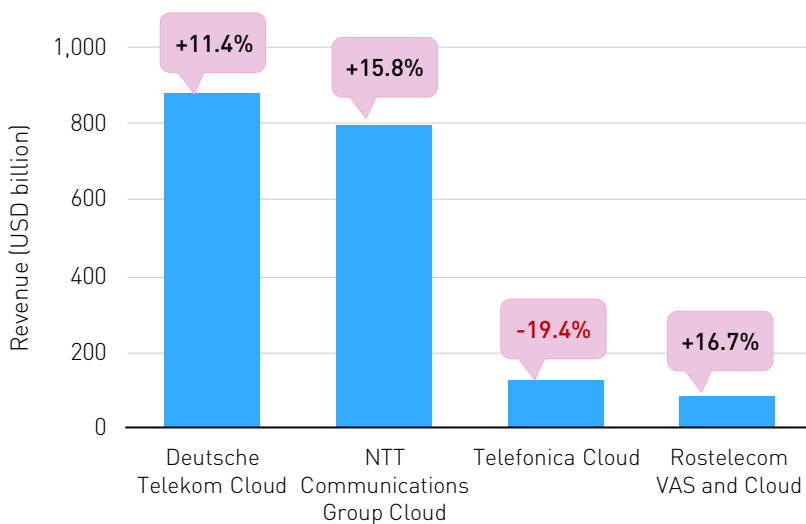


FIGURE 2: CLOUD REVENUE AND YEAR-ON-YEAR GROWTH, BY SELECTED OPERATOR, 2Q 2017
[SOURCE: ANALYSYS MASON, 2017]

Some of the telecoms operators that provide details of cloud revenue are also experiencing significant revenue growth rates, albeit smaller than those of the global IT players. Deutsche Telekom and NTT are the most successful in achieving year-on-year growth of over 10% from a reasonably sizeable base (see Figure 2). Orange does not report revenue figures for its enterprise cloud services, but stated that this revenue grew by 15% year-on-year in 2Q 2017 and 37% in 3Q 2017, although its IT & Integration Services revenue as a whole increased at the lower rate of 3.3%.

The increased competitive pressure in Spain and Latin America meant that Telefónica's revenue declined in this area in 2Q 2017 compared to a year earlier (see Figure 2). However, a positive performance in IaaS and SaaS in Spain and the launch of new projects in Brazil in 3Q 2017 translated into a year-on-year revenue growth of 25.0% between 3Q 2016 and 3Q 2017. Pricing pressures in the USA prompted AT&T and Verizon to sell off some of their data centres, because they could not compete on a cost basis in the economy-of-scale public cloud business.

Deutsche Telekom is the market leader among telecoms operators that compete in the cloud space. Its IaaS services are



popular with the German financial sector, local government and SMEs (which form a significant proportion of the country's economy) because the data is stored exclusively in Germany, which has rigorous data protection regulations. NTT's cloud revenue growth has lifted the company's profits since 2Q 2016, thanks to the company's focus on medium-to-large enterprises – a market segment that has not yet been locked up by the largest cloud providers.

Telecoms operators do not generally disclose revenue from their cloud offerings, suggesting that these typically form a small proportion of overall revenue. However, operators need not be marginalised in the cloud market. They need to play on their strengths of local presence, existing relationships and having a good understanding of customer requirements, as well as connectivity provision, to innovate and partner with IT specialists rather than try to imitate their service offerings.

The public IaaS, SaaS and PaaS cloud markets require large scale and it is therefore unlikely that telcos will be able to compete directly with Alphabet, Amazon or Microsoft. However, telcos are well positioned to play a significant role in delivering managed data, security and private cloud services, as well as services targeted at key industry verticals where they can differentiate themselves.

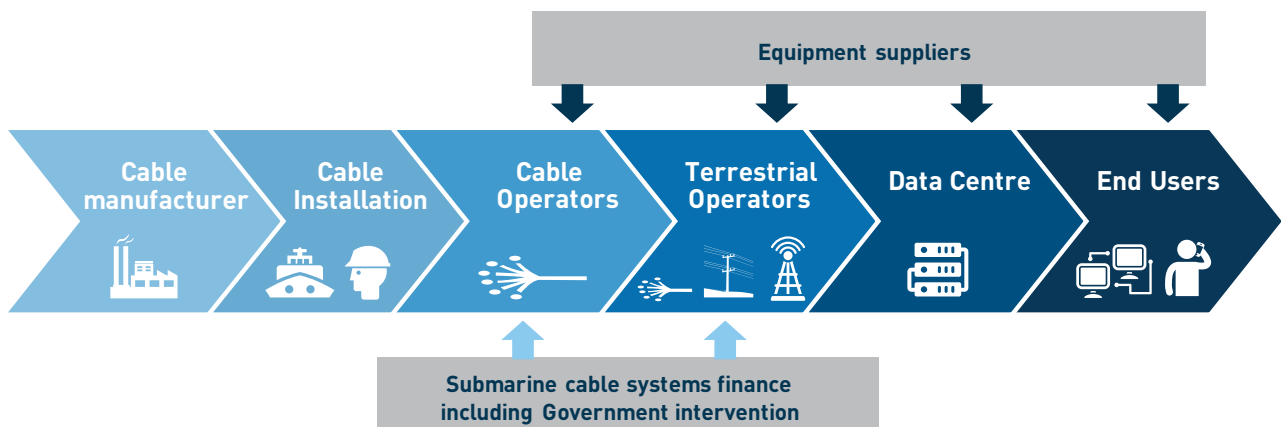
Questions?

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¹ Information taken from the companies' financial reports and press releases. Cloud revenue for Microsoft Azure and Google Cloud and the revenue growth for Google Cloud are estimates based on third-party reports.

Analysys Mason's submarine cable expertise

ANALYSYS MASON HAS WORKED WITH COMPANIES IN ALL PARTS OF THE SUBMARINE CABLE VALUE CHAIN



SELECTED RECENT WORLDWIDE PROJECTS INCLUDE

- Supported a sovereign investment fund in its evaluation of the Aqua Comms transatlantic submarine cable investment opportunity.
- Assisted a EUR29.5 million collaborative initiative by two governments to provide improved international connectivity for the north west of Ireland. Acted as technical advisor during the construction of the submarine and terrestrial elements of Project Kelvin in the north west of Ireland and provided ongoing support during the operational phase which will continue until to the end of December 2018.
- Carried out a feasibility study for a new submarine cable and gave recommendations on how to improve international connectivity for a Mediterranean country.
- Reviewed the business plan for a planned submarine cable running between the USA and Brazil. The review included an analysis of the existing and expected competition along the route in question, as well as a bottom-up, long-term traffic demand forecast. Revenue from the expected long-term sales, as well as that from a sales pipeline we reviewed, was compared to capital and operational cost estimates in order to evaluate the ability of the cable to recover financing costs.
- Performed due diligence on a new cable from the USA to a specific country in South America for a debt financing company. Relevant activities included an initial review of the venture's business plan, an independent forecast of demand to the target country and five neighbouring countries, an assessment of supply, interviews with major carriers and content providers, a reworking of the business plan, a validation of the opex and capex requirements, and a 15 year projection of market share and revenue, taking into account upgrades of existing systems and multiple potential new systems besides that of our client.
- Provided assessment and financial valuation of the opportunity for the national landing party of the GBI submarine cable system in a Gulf country, on behalf of an investor. We reviewed the current national market situation regarding demand and supply for international connectivity, and used benchmarks to assess the current status and to inform forecast scenarios for the market. These scenarios were developed in the form of future international traffic and pricing scenarios as well as market share scenarios for the cable system. We estimated opex and capex requirements in order to calculate the NPV of the opportunity.
- Developed a model to determine the likely pricing and impact of new regional submarine cables (Seacom, EASSy and WACS).
- Reviewed the investment opportunity in the ACE and Main One submarine cable systems in West Africa.
- Performed due diligence for the Bahamas Telecommunications Company (BTC) including the submarine cable facilities and international business.
- Provided assistance in developing a business case to connect a fibre link between Lerwick and an existing landing station on the SHEFA2 cable system in the Shetland Islands.

Analysys Mason's consulting and research are uniquely positioned



Analysys Mason is a global consulting and research firm, specialising in telecoms, media and technology (TMT). Since 1985, Analysys Mason has played an influential role in key industry milestones and has helped clients through major shifts in the market. We continue to be at the forefront of developments in the digital economy and are advising clients on new business strategies to address disruptive technologies.

See what clients have to say about working with us: www.analysismason.com/client-testimonials

ABOUT OUR SERVICES

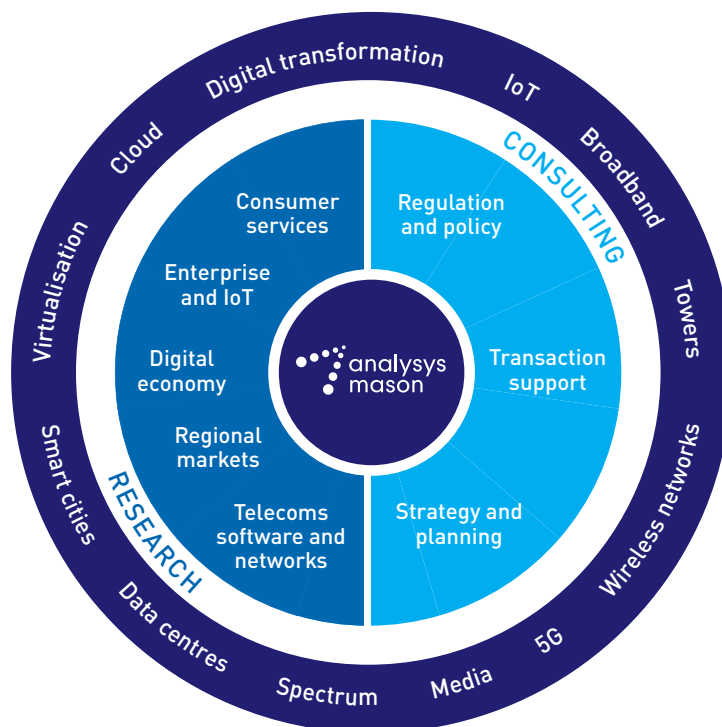
At Analysys Mason, we understand that clients in the TMT industry operate in dynamic markets where change is constant. Our consulting and research has helped shape clients' understanding of the future so that they can thrive in these demanding conditions.

CONSULTING

- We deliver tangible benefits to clients across the telecoms industry, including communications and digital service providers, vendors, financial and strategic investors, private equity and infrastructure funds, governments, regulators, broadcasters and service and content providers.
- Our sector specialists understand the distinct local challenges facing clients, in addition to the wider effects of global forces.
- We are future-focused and help clients understand the challenges and opportunities that new technology brings.

RESEARCH

- Our dedicated analyst team tracks and forecasts the fixed and mobile services accessed by consumers and enterprises.
- We offer detailed insight into the software, infrastructure and technology that deliver those services.
- Clients benefit from regular and timely intelligence, and direct access to analysts.



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