bics

How your capacity provider can help address the demands of the digital-driven economy

Introduction

Data traffic on today's networks is at unprecedented levels, driven by consumers' global digital lifestyles and enterprises shifting to cloud services and Software Defined Wide Area Networks delivered over the public internet.

These trends have resulted in global traffic doubling in 2020 alone.[1] Mobile data usage has also grown, with almost half of the world's population using mobile internet by the end of 2019.[2]

Network operators have a key role to play in supporting this data led ecosystem, and tremendous growth awaits those that get it right. Their first task should be to re-imagine the wholesale capacity provider relationship to meet these emerging needs.

By recognizing the avenues where a wholesale provider can offer both Quality of Experience (QoE) and value, network operators will be able to gear up for future growth and access the tools to generate additional revenue from new services and markets.

[1] https://www.gsma.com/newsroom/press-release/gsma-intelligence-shares-global-mobile-trends-2021/
[2] https://www.gsma.com/r/wp-content/uploads/2020/09/GSMA-State-of-Mobile-Internet-Connectivity-Report-2020.pdf

Traffic drivers and how wholesale networks deliver

The four key drivers behind this growth in traffic

1. The changing nature of enterprise communications

92% of all global organizations use cloud services in some form already.[3] By the end of 2021, public cloud services spend is expected to grow even further to $332.3 billion, up from $270 billion in 2020, marking a 23.1% increase year-on-year.

After the pandemic of 2020-2021, enterprises have embraced the idea of geographically dispersed employees, and are also increasingly relying on mobile devices to conduct business. For them, high quality connectivity is essential to achieve improved service and communication at a low cost, creating a QoE challenge for the network operator.

2. The M2M/IoT revolution

The Internet of Things (IoT) is another factor driving a huge growth in traffic volumes, particularly mobile data. A recent report from Juniper research predicts that the global number of IoT devices will reach 46 billion by the end of 2021, marking a 200% increase since 2016.[4] IoT devices depend on a constant stream of inbound and outbound communication and need connectivity wherever they are.

Global IoT poses special challenges for network operators. First, they must put into place the interconnect agreements needed for a global footprint, and second, they must be able to support mission-critical QoE demands: for example, for medical devices or connected vehicles.

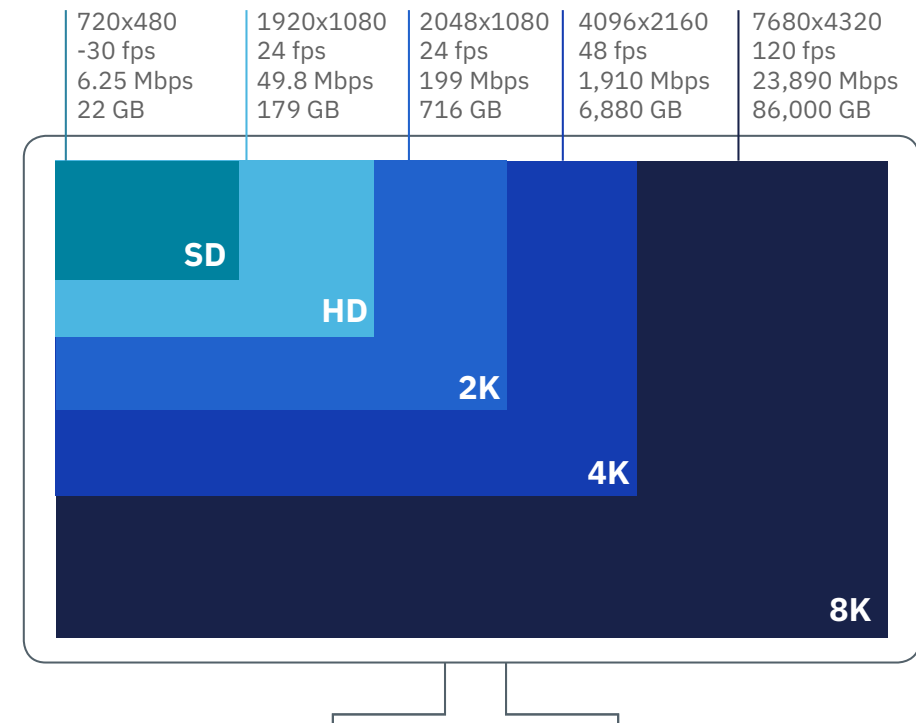---

[3] https://www.idg.com/tools-for-marketers/2020-cloud-computing-study/
[4] https://www.juniperresearch.com/researchstore/devices-technology/internet-of-things-iot-data-research-report/subscription/consumer-industrial-public-services

3. Increasing traffic from digital services

Streaming services and over-the-top (OTT) platforms from digital content providers also saw unprecedented growth during the Covid-19 pandemic. By 2022, video will account for 82% of all internet traffic.[5]

Various other commercial platforms that drive internet traffic, including online retail and banking, and the heavy commercialization of internet-based services are also behind this increase in data traffic. Networks have to rapidly expand their capability in order to meet fluctuations in demand, for both business needs and consumer demands.

720x480	1920x1080	2048x1080	4096x2160	7680x4320
-30 fps	24 fps	24 fps	48 fps	120 fps
6.25 Mbps	49.8 Mbps	199 Mbps	1,910 Mbps	23,890 Mbps
22 GB	179 GB	716 GB	6,880 GB	86,000 GB

SD

HD

2K

4K

8K

[5] https://www.interdigital.com/download/5fa0694a8934bfdf5f00596a

4. Shortest routes for cloud-based services

Finally, the delivery of cloud-based internet services is also an important consideration for operators. Business-to-business internet applications often take a long, convoluted route across the open internet before they reach the consumer, and in many cases this is a 'best-effort' approach.

This can cause a number of issues such as packet loss, variable bit rate, and delay in delivery. Consumers do not accept declines in service quality, which often results in churn, complaints and reputation loss. This creates a QoE challenge around interactive applications, for example.

What operators and content providers need from their capacity partners, both now and in the future

Traditionally, wholesale providers delivered long-distance capacity and carried international voice traffic. But given the data demands of the digital eco-system, they now have to shift to deliver offerings with assured Quality of Experience for different applications. Network operators and their wholesale capacity partners must work together to drive innovation, launch new services, reach new markets and ensure a global presence.

What can you now expect from your wholesale capacity provider?

The service portfolio of a wholesale capacity provider is changing in response to this shift in the marketplace. What can network operators expect in the future?

IP and Ethernet services

Wholesale providers have always provided the routes and connections to the internet backbone that a network operator requires to meet user demand and grow. While this fundamental need still exists, it has evolved in the new data-driven world.

The IP interconnection ecosystem that powers and facilitates the delivery of IP content is now poised for development. It must adjust to meet the pressures applied not only by network operators, but also application and content providers.

What's next?

- **Growth** – To support rising data demands and shifting traffic patterns, wholesale providers must keep growing their offer. Global reach and connectivity is vital for competitive advantage. By becoming intra-continental, wholesale providers will be able to offer network operators a single route for quickly rolling out services to new markets.

- **Deeper interconnection** – Capacity providers must provide highest service quality to network operators with connectivity to Digital Service Providers, cloud systems, and IXPs for smoother connectivity resulting in better managed QoE.

- **Simplicity** – Wholesale providers must develop APIs to make it easier for network operators to tap into their networks, and new systems that will ease initial deployment and capacity management.

- **New use cases driven by SDN:** Capacity providers must use the flexibility offered by Software-Defined Networking to develop innovative new use cases for operators to tap into the enterprise segment. For example, automatic prioritization of bandwidth quality depending on whether the user is making a video call, or backing up transaction records.

Remote peering

Remote peering is essential for dealing with the increased demand for capacity as it enables ISPs to connect with other networks without needing a physical presence at the peering point.

Advanced wholesale providers, such as BICS, can offer this functionality as part of transport infrastructure – creating a dedicated tunnel between networks. The operator gets all the benefits of traditional peering without the complexity, or high operational costs typically associated with the deployment of dedicated infrastructure in multiple locations.

Wavelength services

Wavelength services allow capacity providers to increase bandwidth by multiplexing a number of signals onto a single optical fiber. They were traditionally used by Tier 1 and Tier 2 players to build their own backbone networks. Until recently this was a very stable market and operators used to take up exact point-to-point connections for an average of 1-3 years.

Modern data traffic patterns mean wavelength services need to be far more agile, flexible and operationally faster than ever before.

Another driver of change is the entry of non-traditional players creating highly customized 'white box' solutions with only those features they need at the lowest price point. For example, Facebook announced in December 2016 that its 'Voyager' optical switch would be the industry's first white box transponder and routing device for optical networks.

What's next?

- **Technological evolution** – Apart from white box solutions, a number of other new technologies to increase capacity and decrease latency are in the pipeline.

- **Scalability** – Wholesale providers will need to offer greater scalability to keep pace with international business requirements. Customer interfaces will have to be able to carry high peak loads and low average traffic, alongside a shift in cost structure.

- **Open source** – Capacity providers will migrate their development mindset from proprietary to open source, enabling them to move from vendor dedicated to vendor agnostic solutions in order to drive economies of scale.

> We will soon see the emergence of 'meet me' rooms that automate connectivity between service providers, condensing a process from days to just a few hours, revolutionizing the ability to create new connections on demand.
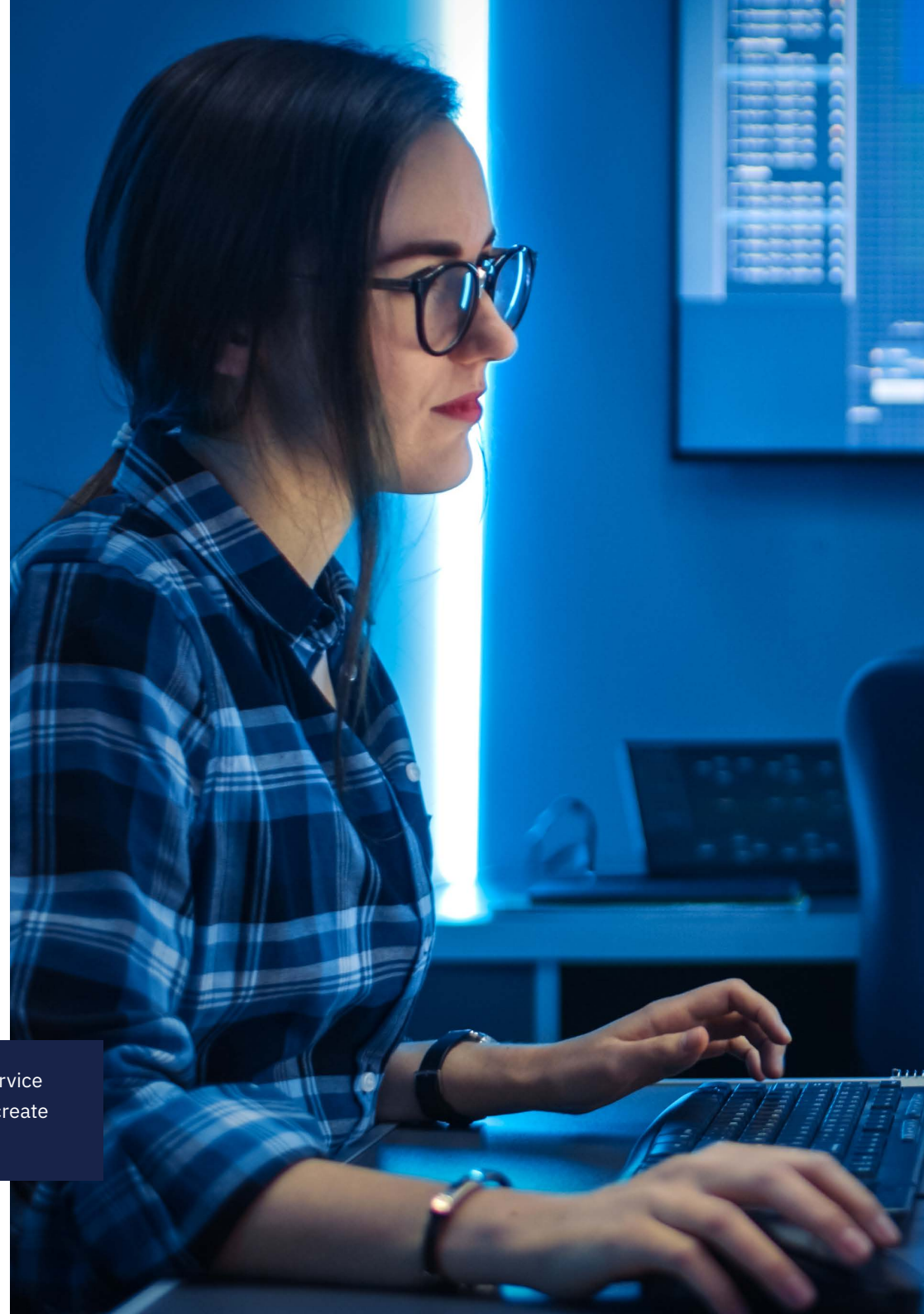
Terrestrial / sub-sea cable routes

Terrestrial and sub-sea cable routes originated as separate cables dedicated to TDM services (voice services) and data services. Today they are giant networks of super-high capacity cables crisscrossing the oceans and connecting different continents – and form the foundation of the entire internet.

Wholesale providers usually deploy terrestrial and sub-sea cables routes, which act as the long-haul backbone of their networks, to deliver capacity when there is a spike in usage. However, as data traffic requirements grew, demand has outstripped capacity, compelling wholesale providers to look for a new approach.

Additionally, the world's largest digital service providers including internet video and TV platforms, social networking platforms and many others are investing directly in their own infrastructure in order to optimize cost and have full control of their networks.

What's next?

- **New routes** – Wholesale providers will need to use data analysis to identify pressure points on their network, identifying where they need to increase throughput, enhance QoE, improve network resiliency, and eliminate points of failure. They will then need to create new low-latency routes to address these bottlenecks.

- **Network optimization** – Sub-sea cable landing points are moving to carrier neutral data centers: bringing down costs, increasing competition and making capacity accessible to multiple customers.

- **New services** – Wholesale capacity providers will start rolling out new services to serve evolving customer demands. These include services such as automation of service provisioning, or on-demand traffic management, and more.

Satellite services

Satellite services provide reliable backup for mission-critical applications in areas with limited connectivity or limited route diversity. They are often vital to provide business continuity and network redundancy for national and international communications. Reputable capacity providers today offer operators consultancy services and turnkey, fully managed connectivity solutions with strong SLAs, backed up with local support.

What's next?

• **Higher capacity to address increased traffic volumes** – Operators can expect their wholesale capacity partners to offer higher capacity and improved cost efficiency through new high-throughput satellites, which will enable them to manage exponentially-growing traffic volumes.

• **Low-latency connectivity** – To address the increasing need for large amounts of quickly scalable, low latency IP capacity we will see wholesale providers tapping new satellite technologies such as the LEO and MEO satellite constellations (Low and Medium Orbit satellites).

• **Satellite integration into the 5G ecosystem** – Operators and enterprises will begin to integrate satellite connectivity into their 4G/5G deployments as a means to access wider backhaul coverage and provide a failsafe back-up for mission-critical connectivity use cases.
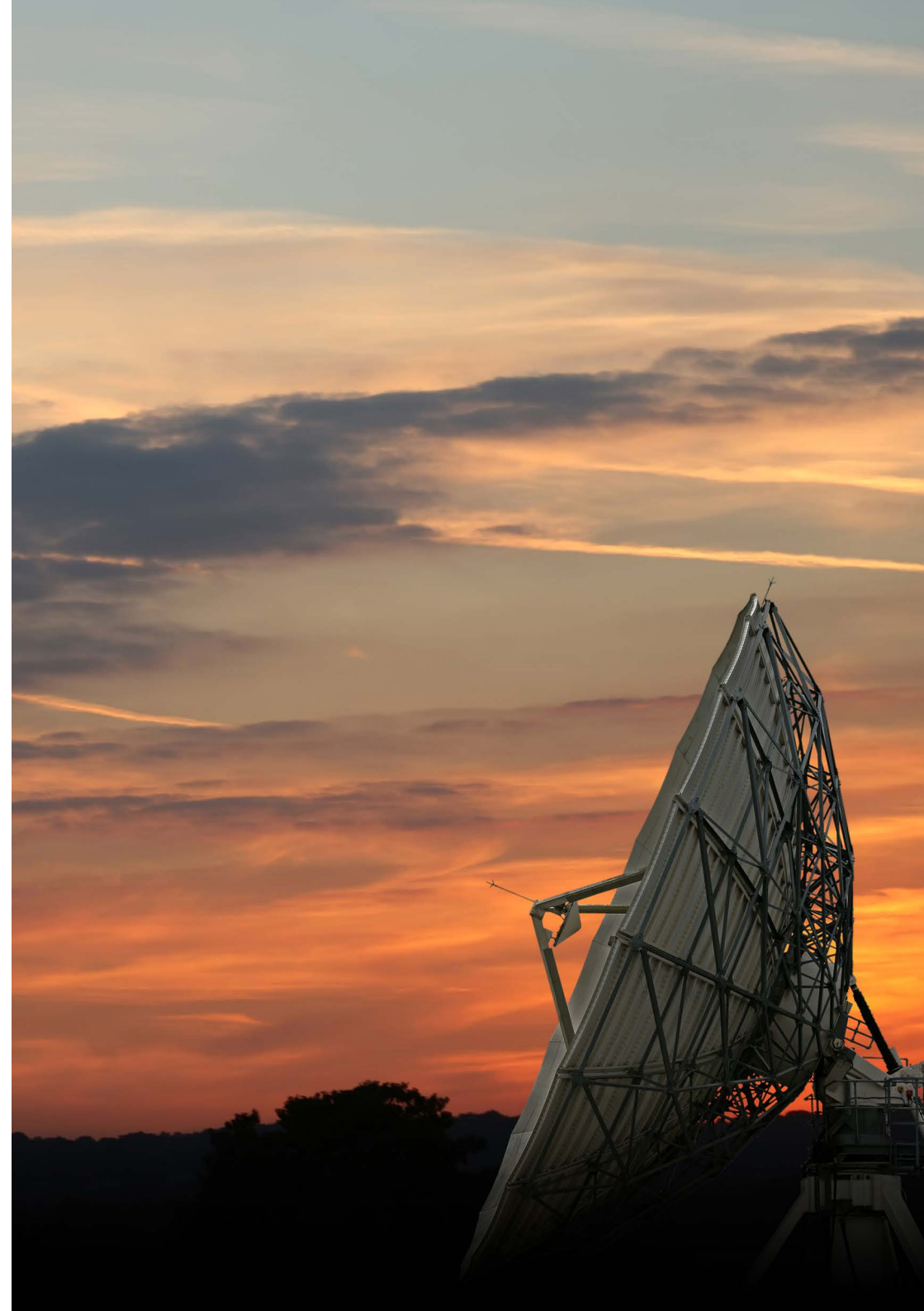
Other areas where wholesale providers can add value to your needs

A more advanced wholesale partner can also offer further value. For example, BICS has built upon its heritage in this space to develop a range of value-add solutions that make it easier for network operators to turn traffic data into actionable insights, further drive QoE, and enhance customer loyalty.

The internet has become commercially mission-critical for business. This has led the future of wholesale to be intertwined with several other key operator considerations, including:

Robust, secure data transport

Privately managed wholesale networks provide a secure, high-quality alternative to the public internet for important traffic. Combined with interworking and interconnection through the use of hubbing platforms, an approach like this can be tailored toward a non-traditional wholesale customer such as a content provider. Network operators can offer shorter traffic delivery times and better resilience as a value-added service.

Managed service delivery

Wholesale providers allow operators to deliver flexible services without up-front investment. In essence, it's the value chain from end-to-end. Since many wholesale providers are working directly with third-parties and specialist telecoms players, operators can rest assured that the Quality of Experience will be what their users expect. Given this setup, wholesale partners can host and manage the delivery of services for smaller operators, or for content providers that don't have their own network infrastructure.

Conclusion

As service providers need to serve their customers end-to-end across the globe, wholesale providers are an essential piece of the telecoms puzzle. Without them, this market will not be able to develop. But the role of a wholesale provider is no longer limited to bandwidth and connectivity.

Wholesalers are ideally positioned to enable new communications services and solutions for network operators. They have the relationships, the technical capabilities, and the existing network infrastructure in place to make this a reality. And their private networks present a truly valuable asset for mission-critical communications that can't be left to the 'best effort' alternative offered by the open internet.

For more information, please visit:
www.bics.com

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