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Author:

Adeline Phua, Principal Analyst, Network Transformation Services

Network as a Service: Rebranding Bandwidth on Demand

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Summary

Catalyst

Network as a service (NaaS) means different things to vendors and providers. Each has a slight variation in how they define NaaS depending on their portfolio's core products and services. In general, the NaaS concept is built on the foundation that the enterprise does not own or maintain network infrastructure but can flex network capacity, including hardware, software, and connectivity services up or down with limited or no restrictions.

It is common for network service providers to allow customers to scale bandwidth when required. With the right infrastructure, some network service providers allow their customers to scale bandwidth capacity on-demand within minutes. Omdia defines this as bandwidth on demand. Enterprises typically associate the need for bandwidth on demand with unpredictable network traffic needs. Since most enterprises do not have unpredictable network capacity needs, bandwidth on demand is often deemed less relevant than the two. Network service providers must educate enterprises about use cases pertinent to bandwidth on demand.

As providers roll out NaaS offers, they can also build better inroads with their enterprise customers by positioning their bandwidth scaling services—whether on-demand or with other components that can be included with NaaS—for example, network hardware, software, and service components. Service providers should recommend relevant network components and have them in the NaaS portfolio to simplify lifecycle management.

What is most important is that network service providers have the credibility and capability to offer NaaS. However, this will not come naturally, as legacy telecom infrastructure may hinder how fast a network service can be activated and how commercials must be considered to determine how short each service contract can be.

This paper addresses why network service providers must “rebrand” bandwidth on demand and incorporate it into their NaaS story and what they must focus on to build a more comprehensive NaaS solution. The report also provides insight into where network providers are in developing these solutions.

Omdia view

Bandwidth scaling is important to customers, but the on-demand element “at first glance” is only relevant to enterprises with unpredictable requirements or enterprises who want absolute control over the network. Omdia believes that adopting bandwidth on demand will become more common in the future for the following reasons:

- Businesses will be going digital, impacting business models and driving the need for flexibility
- Businesses are migrating to the cloud
- Network service providers are increasing network automation capabilities within their infrastructure
- Traditional network-related hardware will be less relevant as network solutions become virtualized

However, there are still many hoops for service providers to jump through before this happens. NaaS is still in its infancy, and how network service providers position NaaS is highly differentiated. Service providers will have to design their NaaS strategy depending on the following:

- Customer needs
- The provider's current operating support systems (OSS), business support systems (BSS), and network infrastructure
- Vendor and network partnerships
- Management's strategy concerning protecting existing revenues or planning for growth

In theory, the concept of NaaS suits businesses today. In reality, NaaS is very complex, with considerations around the supply-side and demand-side to be addressed. Service providers must establish plans to provide NaaS for the near and long term. Building a NaaS offer is a journey. Network service providers must make calculated moves to cater to their enterprise customers, assessing their infrastructure and investing in evolving it to support NaaS.

Key messages

- Bandwidth scaling is a prerequisite for network service providers. When coupled with bursting options, bandwidth scaling may suffice for most enterprises with predictable bandwidth demands. Yet, other drivers behind enterprise demand for bandwidth scaling exist, such as periodic scheduled data back-up to the cloud.
- In the near term, service providers only offering bandwidth scaling may suffice for most enterprises. However, the gap will widen as more intelligence is incorporated by providers providing bandwidth on demand services.
- Bandwidth on demand must be rebranded to appeal to a broader market. It is typically associated with enterprises that require a solution that can adapt to unpredictable traffic demand. Service providers can increase its relevance by repackaging it as NaaS with complementary solutions.
- There are many obstacles deterring enterprises from bandwidth on demand. Other than having predictable bandwidth requirements, concerns about cost-effectiveness, static budgets, and management authorization issues exist. These need to be addressed when designing the NaaS offer.
- Building the NaaS portfolio with on-demand connectivity services, customer premise equipment (CPE), virtual network functions (VNFs), and managed services wrap sets the foundation for network service providers to innovate on new consumption models.

Recommendations

Recommendations for service providers

Invest in offering bandwidth on demand services: There is a clear line between users of bandwidth scaling and those needing bandwidth on demand today. As more intelligence is built around bandwidth on demand services, more enterprises will find applications for the service. Service providers should also invest in

building their bandwidth on demand capabilities to set the foundation to launch new services and consumption models that can improve the customer experience and remain competitive.

Focus on the customer experience: Bandwidth scaling is a prerequisite for any network service provider. Although, how it is delivered and how it is packaged differs. Elements that service providers can use to differentiate include a combination of ease of order, speed of delivery, minimum subscription period, or tailored contractual terms. The bottom line is to enhance the customer experience and to make it as frictionless as possible.

Offer transparency amidst the complexity of the NaaS contract: The concept of NaaS sounds simple from a consumption point of view. However, the mix of different products and services and the back-office work required to make NaaS commercially viable often make contracts complex. Service providers need to simplify options and have price transparency to give customers peace of mind, with clarity on what they are buying, to ease the decision-making process.

Align supplier contracts with their NaaS portfolio: The benefit of an as a service offer is flexibility, but it will come at a price. This is mainly because network service providers are taking a risk with sizable, fixed investments in infrastructure or services that are, in turn, repackaged as a service offers to their customers. The service pricing will undoubtedly reflect the additional costs and the risks taken. Network service providers can attempt to change the consumption model with their vendors and suppliers to lower overhead costs typically passed to their customers.

Market status

Bandwidth scaling is a standard feature

Bandwidth scaling has been available to enterprise customers for a long time. Enterprises and network service providers today consider it a standard feature. A major network redesign is necessary to automate a telco's internal network to provide such a service on demand. Some network service providers have sophisticated operating and billing systems with built-in network automation. As such, bandwidth can be scaled within minutes to the site. In contrast, other providers must use a more manual approach that might take a few working days before the bandwidth can be adjusted. How fast the new bandwidth order can be available depends on the network provider's order and provisioning system set-up.

There may also be physical limitations to be considered as well. Some network providers offer a maximum of 1G bandwidth to a site or 10G to a data center. In these cases, should the demand for bandwidth goes beyond the allocated circuit to the site, a physical upgrade is necessary before the additional bandwidth can be provisioned.

Network service providers offer bandwidth scaling to transport and access networks to be one seamless connection without bottlenecks to the various enterprise sites. It is available to private WAN, where enterprises can scale the likes of MPLS or Direct Internet Access (DIA), or public internet. Depending on the provider, bandwidth on demand may be available for domestic or international sites. The speed at which the bandwidth can scale will depend on the provider's network infrastructure or its integration with the local network provider.

How an enterprise activates higher bandwidth depends on the provider. Network providers give enterprise users a variety of avenues to scale bandwidth via:

- A network provider's self-service portals

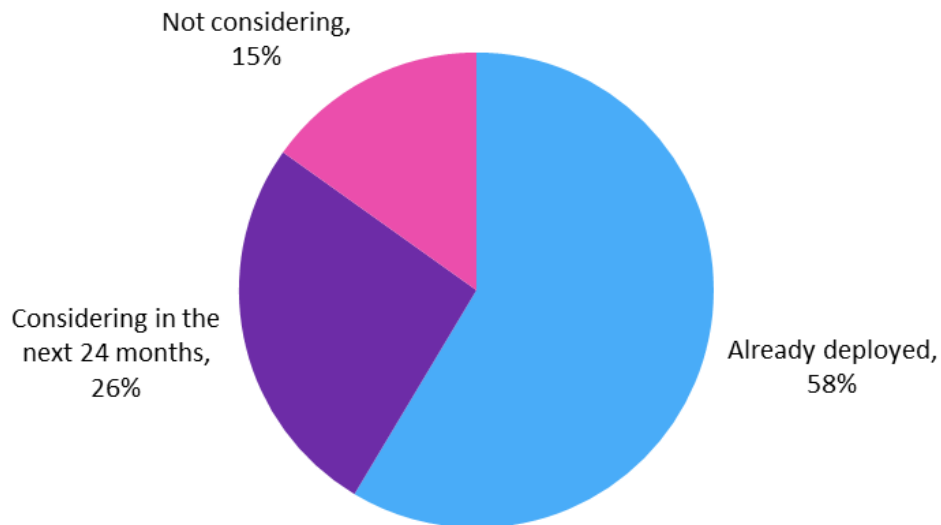
- By using APIs to integrate service provider tools with the enterprise’s own IT service management systems
- A call to a helpdesk or account manager
- Even an email requesting for the bandwidth to be increased

Bandwidth as a service with bursting options may suffice for enterprises

The increase in bandwidth demand is possible for a permanent site (such as the branch, headquarters, or even cloud) or temporary sites such as kiosks. Considering that the demand for higher bandwidth is often predictable, whether for the Black Friday sale for an online retailer, a physical pop-up kiosk for an event, or higher bandwidth requirements for the month-end back-up, orders can be placed in advance. Therefore, some network service providers do not feel the urgency to support the ability to offer bandwidth on demand. Instead, they focus on changing the consumption model to increase flexibility based on the enterprise’s requirements.

When speaking with enterprises, Omdia found that some enterprises quickly associate “on-demand” in bandwidth on demand with unpredictable networks. Thus, they do not think the service is relevant to their business. Based on qualitative conversations with enterprises, the activation speed did not matter to all enterprises. Still, as seen in **Figure 1**, 58% of enterprises use bandwidth on demand services at some sites from time to time based on business requirements.

1. Figure 1: Bandwidth on demand global adoption



Notes: n = 404

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Source: Omdia

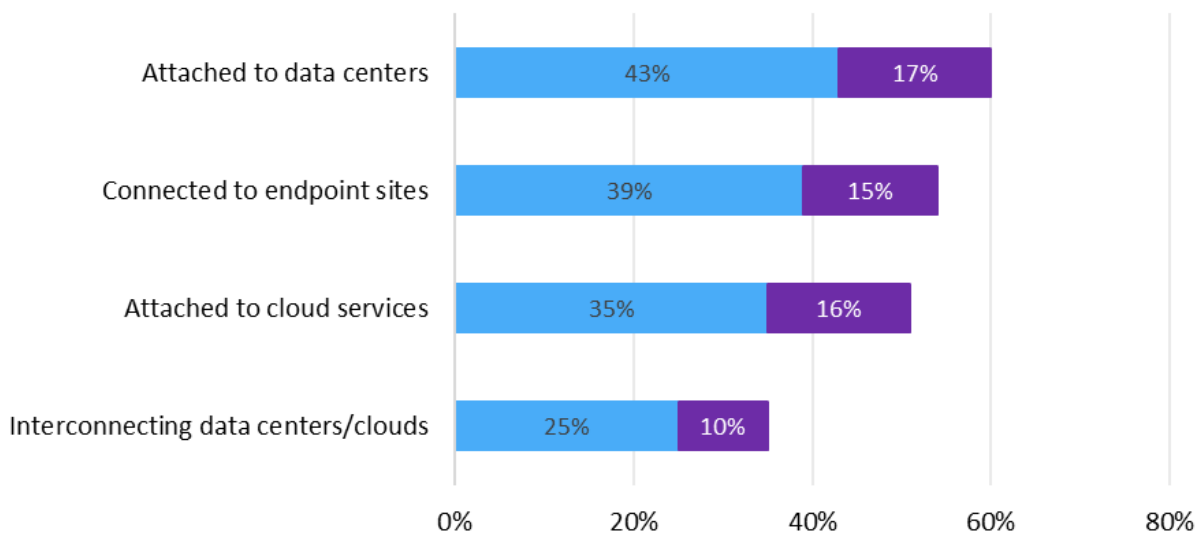
Network providers can reposition bandwidth “on-demand” as part of NaaS to increase the relevance of the service for enterprises with predictable network requirements at different times of the year or even the week. This offer can be for a retailer or bank opening a pop-up kiosk for a short duration, enterprises performing back-ups during a certain time of the week, or a data center requiring higher bandwidth to accommodate test environments.

Opportunity alert: Prioritizing sites that require bandwidth scaling

Omdia conducted a survey to understand the types of sites enterprises have identified as locations where a need to increase bandwidth is likely. As shown in **Figure 2**, of those enterprises that have deployed or are interested in using bandwidth on demand, 60% would like to be able to scale bandwidth to the data center. In contrast, 54% of enterprises want to scale bandwidth to endpoint sites.

Conversely, only 35% of enterprises using or intending to use bandwidth scaling are interested in scaling bandwidth interconnecting data centers and clouds. This can point network service providers to where the opportunities are and the necessary investments to build a solution around such sites.

2. Figure 2: Sites where bandwidth on demand is being used or considered



Notes: n = 327

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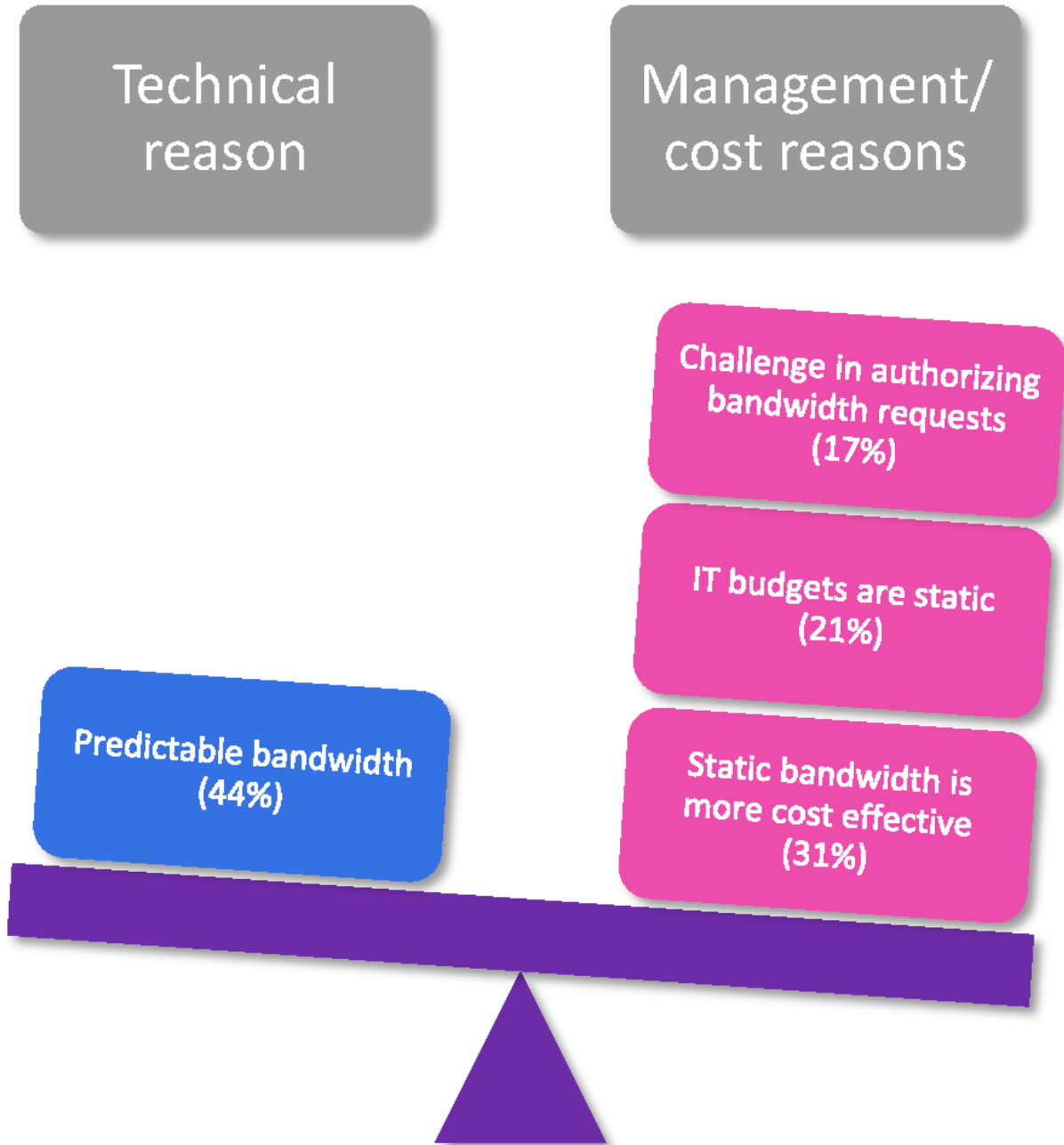
Source: Omdia

NaaS packages and messages must address enterprise concerns

Many drivers are changing how enterprises consume IT, which will knock on network consumption. In addition, business requirements are continually evolving, and IT architectures are changing from on-premise and private data centers to multicloud environments. These changes encourage enterprises to move from a capex to an opex consumption model.

However, not all enterprises are taking to this change. According to an Omdia survey of enterprises globally, 15% of enterprises are not considering an “as a service” consumption model for networks for reasons shown in **Figure 3**. Reasons range from the nature of the business—where bandwidth is predictable and does not need network flexibility (44% of non-considerers)—and perceived cost deterrents—where static bandwidth contracts are more cost-effective (31% of non-considerers)—to management challenges in getting approvals for changes in bandwidth (17% of non-considerers).

3. Figure 3: Reasons for not considering NaaS



Notes: n = 77

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Source: Omdia

Network service providers must address these concerns when designing new bundles or marketing approaches to NaaS.

- Predictable bandwidth:** Most enterprises focus on scaling bandwidth up in a particular instance. On the other hand, considerations for when NaaS can play a role in scaling bandwidth down are downplayed. This can be required because of downsizing or closing a physical enterprise site or addressing predictable but irregular increases in bandwidth requirements such as site back-ups.

- **The perception that static bandwidth is more cost-effective:** There may be a price to pay for flexibility, but over-provisioning bandwidth for the “just-in-case” situation is also an expense that should be considered.
- **Mismatch in budget allocations:** Some enterprises continue to allocate IT budgets in a static manner to simplify the budgeting process. However, this practice influences how IT is consumed. The decision-makers are not the IT teams. Network executives need to work more closely with their finance teams to affect a change in how they budget for bandwidth. The government sector tends to stick with static budgets because of the need for checks and balances to be built into procuring any products or services.
- **A slow approval process to scale:** Some enterprises have more red tape than others, causing the approval process to be challenging and slow. The delay in the process can often be attributed to enterprise finance teams trying to avoid the possibility of an unexpectedly large network services bill. A way to circumvent this delay is for the network providers to have a tiered price with a limit to give users flexibility in managing bandwidth but give the finance team certainty in billing amounts.

Market dynamics

Why NaaS: Plan for the unplanned

NaaS is being discussed because of the convergence of supply and demand. On the supply-side, BSS and OSS have improved. With the right investments, NaaS can allow for more granular management of orders and inventory and network operations that can seamlessly link orders to customer management and billing. With network function virtualization (NFV), network service providers can support VNF subscriptions, such as routers or SD-WAN. It can also expand into the security space through cloud-based security features offered through security service edge (SSE), the security component of secure access service edge (SASE). The virtual nature of these solutions makes it easier for network service providers to provide NaaS.

On the demand-side, enterprises are changing on multiple fronts: changing business environments, digital transformation, moving to a cloud-native approach, and changing consumption models from capex to opex. All these will impact how networks are consumed. In addition, business environments and architectures are becoming increasingly fluid with more test environments or changing site requirements, ranging from branch to headquarters, data center, or cloud.

Any as a service proposition will help enterprises plan for the unplanned. For example, arranging for network services to a temporary kiosk has less friction with a short-term flexible contract today, which would not be as feasible in the past. NaaS can enable a business to change easily and perhaps even innovate on new business models.

Pack a bigger punch by integrating bandwidth scaling with a larger network portfolio and rebranding it

Network service providers’ fixed connectivity revenues are under pricing pressure. To maintain and grow overall enterprise revenues, network service providers must find alternative sources of revenue and innovate on existing solutions. Network service providers can consider the following:

- Expand the portfolio of products and services that is complementary to fixed connectivity
- Develop new fixed connectivity services to remain relevant to their enterprise customers
- Design new consumption models to suit enterprise consumption patterns

A network provider's way to innovate its fixed connectivity offerings is by offering bandwidth on demand or bandwidth scaling. However, considering that every enterprise will also need CPEs, network solutions such as routers, SD-WAN, connectivity services, and professional and managed services wrap, combining these products and services makes sense.

Furthermore, managing multiple vendors, managed services partners, and network suppliers is a headache for enterprises. Matching and managing the lifecycles of various products with service contracts is an unenviable task. Enterprises that prefer to have one-throat-to-choke often opt to streamline the number of suppliers they work with to simplify supplier management.

Going cloud-native with VNFs

One reason enterprises may choose to buy products and services from specific suppliers under different contracts could be their preference for particular vendor solutions that the organization considers best in class. To reach this set of customers, network service providers must identify and partner with vendors favored by these enterprises.

Some vendors have moved from traditional hardware solutions to VNFs hosted in the cloud. Enterprises can subscribe to these VNFs to be hosted on CPE and scale requirements according to the business needs. For network service providers, they can resell solutions. Still, without further integration, enterprises or their managed services providers will have to contend with managing multiple panes of glass. For the network provider, there is no differentiation from the next reseller.

Some network service providers go further by integrating vendor solutions into their telco cloud at points of presence (PoPs) closer to the users. They also offer proprietary management tools that give users full visibility and simplified management over a single pane of glass. Some intelligence can also be built in to provide recommendations for complementary solutions matching the site's requirements.

Larger enterprises may choose to integrate the management of these tools into their internal operating systems. However, this is only possible if open APIs are available from the provider.

No one-size-fits-all bundle or commercial structure

For an enterprise, a five-year hardware refresh cycle is a familiar process. However, with digital transformation, the refresh may not be a one-for-one replacement. Implications on other technologies, such as interoperability and lifecycle management, also need to be considered, increasing the complexity of the technology refresh process.

NaaS allows enterprise customers to consume network services flexibly and, in theory, simplifies the refresh process. However, it is a balancing act for any network service provider, as the solution must be commercially viable. In essence, network providers tailor their NaaS proposition to suit their enterprise customers' priorities. It could be providing more flexibility at a price or setting a minimum period to cover the fixed cost of delivering a service. Regardless, enterprises should be able to buy the services they need—connectivity, CPE, or a VNF—for contract periods that make sense to them.

Even as the general trend shows a migration from a capex to an opex consumption model, not all enterprises move in the same direction. Some industries, such as national and local governments, still prefer fixed contracts to align with their internal procurement process. As governments migrate to the cloud, this will change more slowly than other industries.

Case studies

Colt

Strong footing with powerful bandwidth on demand capability

Colt started offering bandwidth on demand in 2017 with ethernet circuits between data centers. Today, on top of the data center on-demand proposition, the Colt on Demand provides bandwidth on demand to most of its fiber footprint of roughly 30,000 sites. It also supplies cloud access on demand to all major cloud providers, including Amazon Web Services (AWS), Google, and Microsoft Azure. Colt's on-demand offering includes ethernet private line (EPL), ethernet virtual private line (EVPL), and direct internet access to enterprise endpoints.

The key differentiator for Colt is its capability to deliver bandwidth on demand almost instantaneously to its enterprise users. Colt's online customer portal is fully automated from order to service delivery and billing. Enterprises can subscribe to an access port for a minimum period depending on the site type—enterprise site of one year, datacenter site for three months, or no minimum commitment for cloud endpoints. The bandwidth can be scaled accordingly for at least one hour via Colt's online customer portal. Enterprises that prefer fixed-term contracts can opt for a fixed port and connectivity subscription with the option to boost bandwidth by the hour. Colt also has a strategic alliance arm where it wholesales its bandwidth on demand service to other network service providers to support the needs of its enterprise customers.

Pivoting to NaaS with flexibility and automation as guiding principles

Continuous innovation is taking place within Colt to expand beyond bandwidth on demand to a more comprehensive NaaS offer. Solutions are designed to offer more flexibility for its enterprise customers with automation built in.

Colt sees the benefit of staying away from bundling its solution and is taking a guided experience approach. This is to ensure that the enterprise customer is fully aware of what is generally needed to achieve its end goal based on Colt's experience and, at the same time, has the flexibility to innovate and apply the technology in new ways.

Colt has all the right pieces to build a strong NaaS proposition with flexibility and automation as its guiding principles. Colt is innovating and investing in broadening its NaaS portfolio. It plans to expand its geographical coverage and VNF solutions in the future.

Omdia's take

Colt's strength is its strong technical foundation to deliver bandwidth on demand. The appeal of Colt's on-demand offer is the flexibility in scaling bandwidth, the digital-first customer experience with in-built automation, and its openness to tailor services and contract terms to each enterprise customer.

Colt is moving in the right direction to incorporate more services to build an end-to-end NaaS offer for its customers.

Telstra

Domestic focus on bandwidth scaling with its Adaptive Network offer

Telstra is no stranger to bandwidth as a service. The provider broke into this space in late 2020 with its Adaptive Networks offer, which allowed enterprises in Australia to scale business IP and access services monthly with no long-term lock-in contracts. Telstra started on this journey by innovating through its commercial terms giving enterprise customers flexibility in connectivity contracts.

With an emphasis on customer experience, Telstra includes flexibility in the negotiated price by incorporating a floating element in the contract and allowing customers to activate bandwidth scaling via their preferred methods. This could be via a portal, a phone call with their respective account managers, an assurance line, or even over email. Telstra's bandwidth as a service solution is available today for MPLS and access services for at least one month.

Like most network providers, Telstra's NaaS for the domestic market is still a work in progress, with plans for new connectivity options and VNFs. Telstra's overarching vision is for all network services and connectivity to be available on demand.

Approach NaaS internationally via cloud connectivity

Telstra has a NaaS offering targeted at the international market called Telstra Programmable Network (TPN). TPN allows users to connect to more than 170 public cloud sites, including Amazon, Google, and Azure, and 35 key data centers with bandwidth on demand over Layer 2 Ethernet. The bandwidth can be scaled in one-megabyte increments and delivered within minutes.

Enterprises can scale bandwidth and deploy VNFs from virtual routers to firewalls and other services through a portal. Enterprise users are charged for the services by the hour. TPN is the most flexible on-demand solution provided by Telstra today.

Omdia's take

Telco infrastructure is monolithic, and any shift in architecture will take time. Telstra started its NaaS journey by addressing Australian enterprises' need for more flexibility through commercial terms in contracts. Although not instantaneously, offering enterprises the option to scale bandwidth is an excellent approach to test demand for such a service before investing further.

Telstra has also identified a niche opportunity for its TPN offering by targeting the international needs of Australian companies more familiar with the Telstra brand. Telstra's customer-centric approach will guide how it structures its NaaS evolution domestically and internationally, always considering its need for flexibility and catering to how the customer prefers to consume a service.

Verizon

"Table stakes" with mature bandwidth-on-demand offer

Verizon has a mature bandwidth on demand proposition with Dynamic Network Management. It allows enterprise users to increase bandwidth for various transport and access services, including MPLS, Ethernet, and DIA, via a portal within minutes. Users can change port speeds on demand. Verizon generally supports 1 gigabit to the enterprise endpoint and allows enterprises to scale bandwidth in 100-megabyte increments. The maximum capacity is 10 gigabits to support cloud or data center site requirements. Verizon went one

step further to provide APIs that can be integrated with the enterprises' preferred operating systems. Dynamic Network Management is available globally for a minimum subscription period of 12 months.

One-stop NaaS shop

Verizon launched its global NaaS offer in August 2022. It is centered around network-related components, including transport and access to CPE, network services or VNFs, and even the security and managed services wrap needed to connect sites. VNF support includes a virtual router, SD-WAN, WAN optimization, and SD-LAN.

Verizon has changed the conversation when working with enterprise customers to identify service needs. Instead of pitching solutions such as MPLS or DIA, Verizon has changed its approach to addressing the network availability outcomes desired by the enterprise. This will determine the recommended solution bundle best suited for the site.

To address brownfield sites, Verizon also sells individual network components as a service. It allows the integration of existing network and security-related products and services aligned with its portfolio. The aim is to simplify migration from a traditional network to a NaaS consumption model.

Under this package, enterprises have a minimum subscription period of one month for each site tied to a master contract of one year for a combination of various sites. This is suitable for enterprises with short-term pop-up kiosks. Bandwidth is on demand and can be scaled within minutes in 100-megabyte increments.

Verizon's solution targets large enterprises and can also apply to mid-market and SMBs. More developments for this offer are expected soon.

Omdia's take

Verizon has the infrastructure to design different flavors of NaaS to cater to its enterprise customers. Verizon is designing a customer-centric solution and, at the same time, making sure that the offer is commercially viable.

It is refreshing to see the outcome-based approach to its NaaS product line being offered to enterprises. It may be closer to a plug-and-play approach for greenfield sites, but migration for brownfield sites will be more complex with legacy solutions to integrate. Regardless, enterprises can get more flexibility with Verizon's NaaS solution.

Market outlook

NaaS offers are still evolving

Bandwidth scaling is a prerequisite for any network service provider; however, the on-demand capability is inconsistent across all providers, types of sites, and geographies. Network service providers are still investing in building the technology. They generally start by productizing the lower-hanging fruit at data centers or cloud sites before attempting a broader enterprise reach. There is also a higher likelihood that network service providers will form an on-demand service with ethernet point-to-point before DIA. Building a telco cloud providing VNFs from vendor partners is also a major digital transformation move for any network provider; the timing for availability will differ.

The industry is still in its infancy, where each network service provider's NaaS portfolio is highly differentiated today. Given the complexity of shifting architectures, this will still be the case in the short to medium term.

Continuously innovate on new solution additions and consumption models

The most common solutions under the NaaS umbrella are connectivity services, CPE, and VNFs, but there is plenty of opportunity for growth. Network service providers can consider other non-network related solutions complementary to the NaaS offer and, ideally, can be consumed as a service.

With a sophisticated NaaS portfolio, new business models can be introduced. The price of network services does not have to be centered around a standalone solution but can be by price per site or even per user. It is up to each network service provider to customize offers for its customers.

Appendix

Methodology

Omdia used a combination of primary research and secondary sources to complete this report. Primary research included relevant Omdia research, supported by briefings and qualitative interviews with service providers.

Further reading

[2023 Trends to Watch: Enterprise Network Services](#) (Sept 2022)

[Enterprise Network Services Insights Survey – 2021](#) (Nov 2021)

[Network as a Service – Enabling the Agile CSP](#) (April 2021)

Author

Adeline Phua, Principal Analyst, Network Transformation Services

askananalyst@omdia.com

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[omdia.com](https://www.omdia.com)

askananalyst@omdia.com