White Paper

Network as a Service Enables Flexible Consumption of Secure and Agile Enterprise Networks

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EXECUTIVE SUMMARY

The past handful of years have seen a dramatic evolution in how organizations consume network infrastructure components. The rise and mainstream adoption of cloud computing has ushered in an era in which enterprises have become increasingly comfortable with consumption of IT assets in a flexible, as-a-service model. Enterprise networking equipment, however, has lagged behind in this trend compared with compute and storage assets being consumed as a service. That's changing now.

Traditional consumption of network equipment has typically been a one-time expenditure of hardware, software, licenses, and services that may or may not be packaged together. Recent important advancements have made networking as a service (NaaS) ready for enterprise adoption. NaaS models are inclusive of integrated hardware, software, licenses, and support services delivered in a flexible consumption or subscription-based offering.

NaaS helps enterprises overcome pain points such as relying on outdated infrastructures and architectures, overcoming COVID-19 business impacts, and providing higher-quality network and IT services by constantly monitoring and optimizing the network. NaaS can help organizational sustainability goals through recycle and upcycle efforts. In addition, NaaS can reduce security risks from obsolete hardware and software warehousing. But perhaps most importantly, NaaS allows IT workers to focus on business-enabling tasks rather than "keeping the lights on."

IDC conducted a study to explore current enterprise networking buying patterns, gauge interest in as-a-service models for networking, and understand driving factors for NaaS. In addition to a survey of more than 1,000 North American enterprises, IDC also interviewed a leading higher education institution to learn about its experiences using NaaS. This White Paper shares the results of the IDC research, analyzes trends driving the NaaS market, and explores how enterprises can benefit from this new model.

NaaS: An Evolution of Flexible Consumption for Enterprise Networking

Enterprise networking equipment has been primarily purchased via a traditional one-time capital expenditure (capex) model. Network infrastructure components such as wireless local area networking (WLAN) access points, controllers, local area networking (LAN) ethernet switches, and wide area network (WAN) routers are typically purchased via a one-time up-front hardware purchase, along with a software license to run the hardware and software-based management platform.

Recent years have seen a shift: The licensing and software management components of enterprise networking infrastructure are increasingly offered via a subscription. In this instance, enterprises have had an opportunity to purchase the software components and licenses as a multiyear subscription. This shift from capex to opex for licenses and software was driven in part by the rise of cloud-based platforms for managing enterprise networks.

There's been another significant advancement in the market though: offering the infrastructure hardware components as a service too. This flexible consumption of the full life cycle of network equipment, inclusive of hardware, software, and services, is what IDC refers to as networking as a service.

IDC survey data shows strong interest among enterprises in NaaS models. Figure 1 shows data of how enterprises plan to pay for IT and network infrastructure assets in their next procurement cycle. It shows strong interest in flexible consumption models, which are anticipated to surpass capex spending in the next procurement cycle. Survey data shows 41% of respondents said they would anticipate using a flexible consumption model, whereas 37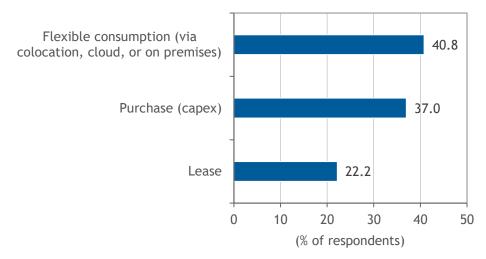% said they would use a traditional capex model and 22% said they would lease equipment in their next procurement cycle. This data reinforces the strong interest among enterprise buyers in flexible consumption and as-a-service models for IT and networking assets.

> IDC defines **networking as a service (NaaS)** as enterprise network infrastructure that is consumed via a flexible consumption operating expense (opex) model, inclusive of hardware, software, management tools, licenses, and life-cycle services.

FIGURE 1

Flexible Consumption Versus Capex Versus Lease

Q.   How do you anticipate your organization will pay for its IT and network assets in the next procurement cycle?
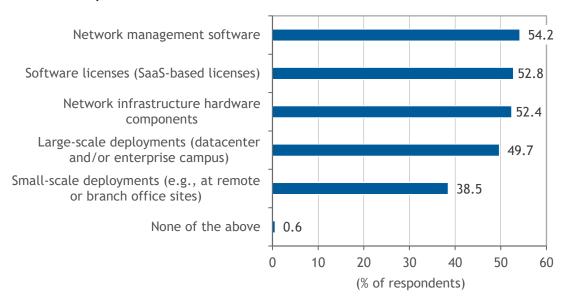

n = 1,010

Source: IDC's *NaaS Survey* (sponsored by Aruba), 2020

Enterprises are looking to flexible consumption and as-a-service models for the full range of infrastructure components in their enterprise networks. Figure 2 shows results of a survey question asking which aspects of the enterprise network flexible consumption models are a good fit for. More than half of the respondents, or 52%, said network infrastructure hardware components; the same rate, 52%, said SaaS-based software licenses, while 54% said flex models are best fit for network management software. This data shows that enterprises are interested in utilizing flexible consumption models for the full range of network infrastructure within their enterprise, inclusive of hardware, software, and licenses.

FIGURE 2

Assets Best Fit for Flexible Consumption

Q.   *For which of the following assets (features) do you believe flexible consumption models are the best fit?*

n = 1,010

Source: IDC's *NaaS Survey* (sponsored by Aruba), 2020

Enterprise Network Operational Challenges

Enterprise networks today are dynamic, which is driving interest in more flexible models for consuming enterprise networking equipment. There are more users, devices, and "things" that must be supported within the network than ever before. Those devices are increasingly accessing higher-bandwidth applications, such as voice and video streaming services. Users, meanwhile, expect low-latency, highly reliable network connections. Combined, IT managers have a complex environment to support.

Another challenge is maintaining the IT and network assets needed to run the business. Enterprise IT managers want to focus their networking teams on business-enabling tasks. The more time IT workers spend "keeping the lights on" equates to less time for focusing on advanced projects that can help achieve broader business goals. Network security is another top challenge. Specifically, enterprises
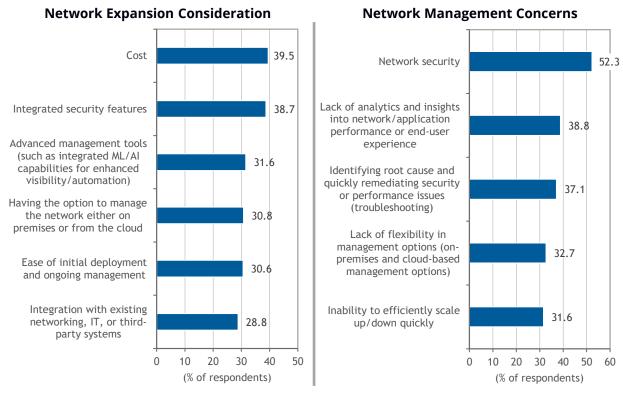
report a lack of analytics into network and application performance, which can be a key to quickly identifying and remediating potential threats within the environment.

IDC survey data reinforced these points. Figure 3 shows two survey data questions, one focusing on the top network management concerns and another showing the top considerations enterprises face when expanding their networks. For network expansion considerations, the use of advanced management tools that include machine learning (ML) and artificial intelligence (AI) for enhanced visibility and automation ranks highly behind cost and security. Flexible consumption of enterprise network infrastructure addresses many of these challenges.

NaaS models allow enterprises to outsource a broad life-cycle spectrum of an enterprise network, from planning and deployment, day-to-day operational management, upgrades, monitoring, troubleshooting, and patching all the way to decommissioning and end-of-life support. Through that process, organizations get access to the latest technology offered by the NaaS vendor, including new hardware components and software features released by the network infrastructure provider. Networks managed under a NaaS model are constantly monitored for performance and security, easing the management burden for enterprises. Upcycling and recycling of equipment help infrastructure components to be refreshed at a faster pace compared with traditional consumption models to keep up with innovation.

FIGURE 3

Network Expansion Considerations and Management Concerns

Q.   When adding a new location to your existing network, what considerations come into play?

Q.   What are the biggest concerns with managing your network today?

Network Expansion Consideration

Consideration	% of respondents
Cost	39.5
Integrated security features	38.7
Advanced management tools (such as integrated ML/AI capabilities for enhanced visibility/automation)	31.6
Having the option to manage the network either on premises or from the cloud	30.8
Ease of initial deployment and ongoing management	30.6
Integration with existing networking, IT, or third-party systems	28.8

(% of respondents)

Network Management Concerns

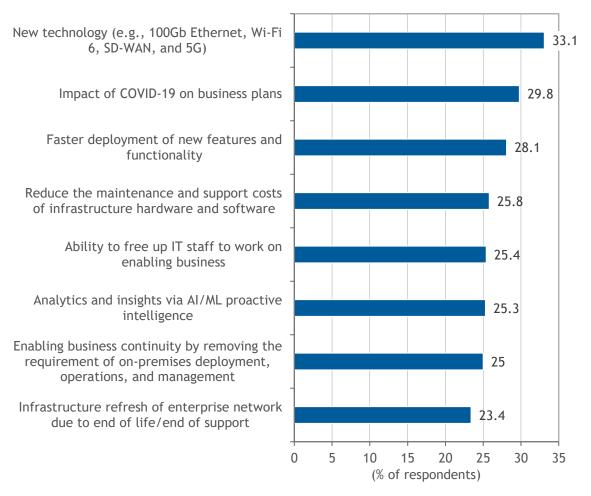| Concern	% of respondents
Network security	52.3
Lack of analytics and insights into network/application performance or end-user experience	38.8
Identifying root cause and quickly remediating security or performance issues (troubleshooting)	37.1
Lack of flexibility in management options (on-premises and cloud-based management options)	32.7
Inability to efficiently scale up/down quickly	31.6

(% of respondents)

n = 1,010

Source: IDC's *NaaS Survey* (sponsored by Aruba), 2020

NaaS Drivers and Opportunities

IDC survey data shows that enterprise network decision makers perceive a range of benefits for using NaaS models. Some of the top drivers for these models are accessing new technology, helping organizations overcome the impact of COVID-19 on business plans, and enabling faster deployment of new features and functionality (see Figure 4). In regard to COVID-19, organizations want more flexibility in times of uncertainty. NaaS allows organizations to align their networking needs to the business dynamics, with the ability to scale up and down as needed.

FIGURE 4

Network as a Service Drivers

Q.   What has triggered or will trigger the expanded use of NaaS models within your organization?

n = 1,010

BENEFITS OF NAAS MODELS

The common themes about the benefits of as-a-service models like NaaS are flexibility, simplicity, and transparency, and those are the fundamental reasons for steady adoption of these offers. IDC research indicates that adopters recognize many benefits; however, the alignment of usage with budgeting is the most common. The flexibility to scale both up and down, the simplicity of having all the required metrics on one plane of glass, and the transparency about pricing and system optimization are the key benefits of these engagements. In addition, further analysis of the survey data highlights the benefits of these models from an operational, planning, financial, and security standpoint and underscores why IDC expects adoption of these models to accelerate over the next few years.

Planning and Deployment

The promise of digital transformation (DX) is that it will enable businesses to use new technologies like AI, blockchain, or IoT to accelerate growth and improve overall agility. As enterprise customers have embarked on this journey, they have realized that before they can become digitally transformed, there are many decisions and processes that need to be implemented. However, the first step to achieving this objective is to have an updated IT infrastructure, and that's where new payment options like as a service can help achieve this goal. IDC observes that organizations that adopt NaaS models experience faster deployments because they are leveraging the expertise of partners and vendor specialists to expedite the planning process. The lessons learned through multiple engagements with organizations of all sizes and within most verticals provide valuable insights to streamline the planning process. Another benefit is that NaaS allows access to new technology, including infrastructure like Wi-Fi 6 and 100GbE, with access to equipment refresh and upcycle opportunities to ensure that the network is operating at peak performance levels and can scale up or down to meet demand requirements. NaaS also improves refresh cycles because upgrades happen seamlessly when there is less scheduled downtime and improves performance due to newer equipment and enhanced service levels. Finally, NaaS reduces the amount of outdated, inadequate infrastructure within the environment due to constant monitoring of performance metrics for all IT assets within the environment.

Operational Benefits

IDC research reveals consistent findings from adopters of NaaS models when asked about the operational benefits of these programs. Interestingly, the operational benefits are not always immediately apparent but provide substantial relief from IT staff tasks that are required and enable organizations to attain their business agility goals. The survey findings focus on key operational benefits:

- **Reduces IT staff workloads:** With many key services such as deployment and decommissioning included in the offer, IT staff can now focus on strategic business tasks and rely on their NaaS vendor to provide the service levels that are required for their organization.

- **Improves operational efficiencies:** Constant monitoring of all usage levels provides important insights to IT staff, improves response times, and provides consistent operation levels at all locations.

- **Optimizes network performance:** Advanced automation and management tools (ML/AI) reduce manual management of the network, while the ability to remotely manage network operations provides increased visibility and analytics about all aspects of usage and bandwidth: 43% of respondents reported that system optimization is key — automated upgrades, patching, and firmware management remove IT staff pain points.

- **Improves performance:** NaaS monitoring reduces over-provisioning and improves performance through predictive analytics that minimize failures and offer better performance levels. Adopters recognize that monitoring reduces costs and delivers better user experiences.

- **Simplifies tax and compliance efforts:** 74.5% of respondents believe that consistent regional SLA performance for issues like regulatory compliance and tax implication is important to very important because it addresses another advantage of a NaaS offer — simplification. Running a networking environment is complex, and if the locations are spread across the globe, that increases the challenges. Adopting a NaaS model simplifies the tax and compliance efforts because of local expertise at each location that understands both local and regional regulations.

- **Helps organizations reach sustainability goals:** End-of-life equipment can often be refurbished or recycled, which meets environmental targets and offers financial benefits through fair market value trade-ins to offset budget shortfalls. Because asset decommissioning is built into the offer, IT staff are no longer responsible for tracking assets and managing recycling efforts. And the value of trade-ins can be used to offset new equipment costs and improve budget metrics.

Security

Security is a foundational concern for all organizations, regardless of size or industry vertical, and IDC survey results show that it is also strategically important for NaaS engagements. Fundamental to the concerns about security are guarantees about data protection and a comprehensive security plan across their entire environment. NaaS models inherently have advanced management tooling as part of the offering, including for security. NaaS vendors use advanced telemetry to monitor what is happening in the network, which can be used for security too, by alerting enterprises when unknown or nefarious traffic is on the network and automatically remediating the issue. With this type of functionality built in, NaaS models enable enterprises to have an extra set of eyes on their network environments, protecting against security threats. To address the concern about a secure environment regardless of size or diverse locations, embedded security within a NaaS offer helps identify risks at all locations – datacenter, campus, and edge – and provides additional assurance about network protections.

Another security concern is the end-of-life IT asset decommissioning process, which includes tracking the assets when they are no longer attached to the network and ensuring that the IT assets are disposed of properly and comply with regulatory guidelines in all regions that an organization operates. IDC finds that organizations with outdated hardware and software infrastructure are at a higher exposure to cybersecurity risks due to lax protocols for patching and software updates. Another topic of concern is the end-of-life asset decommissioning process. IDC survey data indicates that although most organizations return their equipment to an OEM or ITAD partner, the next most common strategy is to repurpose the IT assets within an organization or to warehouse the equipment. IDC finds that when organizations utilize warehousing as an end-of-life asset management strategy, this leaves them open to security risks. IDC research underscores that a well-formed IT life-cycle management policy that includes a comprehensive decommissioning policy reduces security risks and improves sustainability metrics. In addition, IDC observes that most organizations include equipment recycling efforts within their sustainability plans. IDC finds that because NaaS offers provide comprehensive life-cycle services from deployment to decommissioning, organizations can meet their sustainability goals with the end-of-life recycling efforts that meet all regional compliance requirements and reduce exposure to financial penalties.

Financial

Fundamentally, the reasons that organizations adopt as-a-service models like NaaS are to align usage with budgets and improve financial decision making. This observation is underscored by IDC research of adopters of these models that highlight utilizing an as-a-service model enables them to be more agile about all levels of decision making due to better insights. Specifically, as-a-service models like NaaS provide better cost metrics and enhanced insights into all aspects of usage, including power, capacity, bandwidth speeds, and service levels, that enable IT and business leaders to make strategic decisions about workloads and pending projects. These valuable insights allowed organizations to be more agile and nimble about decision making. In 2020, the importance of being able to rapidly pivot

based on strategic insights became an important differentiator to surviving and then thriving during the COVID-19 pandemic.

NaaS models also enable enterprises to be greener and reach their sustainability goals because, with constant metering and telemetry, the useful life of infrastructure equipment can now be matched to workloads. These improved metrics can be matched to equipment life spans, lengthening terms for equipment that is meeting performance and capacity requirements or replacing equipment to match expanding or bursting performance levels. Another benefit of NaaS is the opportunity to unlock existing equipment value to fund transformation. Capturing current equipment values removes budget barriers by capturing asset value from existing infrastructure assets and utilizing that to invest in new projects like NaaS.

END-USER PERSPECTIVE: TEXAS A&M DEPLOYS NAAS

Texas A&M University's College of Engineering has 21,000 students across 15 departments, and it has one of the leading deployments of a NaaS model. The catalyst for embracing NaaS at the college was a major renovation and expansion of the Zachry Engineering Education Complex, a 525,000 sq ft active learning building. The college's CIO, Ed Pierson, was looking for new ways of procuring network equipment to support this dynamic environment. Priorities for the deployment were to support a bring-your-own-device (BYOD) policy for students and have a wireless-first connectivity throughout the building.

Part of the college's embrace of the NaaS model was a financial decision: Pierson was looking for the network to be delivered as a service, with a single monthly payment. The NaaS model allows for staggered refreshes of equipment as the college needs it. Today, the NaaS model is supporting more than 400 wireless access points in the building for a variety of client devices. The classrooms include 18 96-person rooms and 14 50-person classrooms, with a need for 3–4 wireless connections per student dedicated to each room. With the NaaS model operational, Pierson said he's realized significant benefits. For example, the shared model of managing the network between his team and HPE-Aruba, the college's NaaS vendor, frees up his team to focus on security and optimizing the network rather than day-to-day management. In addition, Pierson points out that one of the key benefits of NaaS is the ability to quickly pivot for unplanned events, with COVID-19 being a prime example. With many more students working remotely, the college has much more outbound video instead of inbound video, a rapid shift from previous networking traffic, and NaaS was the perfect solution for an unexpected spike in volume. Another benefit that Pierson discussed, that is not often acknowledged, is that hiring high-end networking engineers has become very competitive and a hard-to-find skill set; deploying NaaS helps alleviate the need for that onsite expertise because the college is able to rely on HPE-Aruba, the NaaS vendor, to manage and optimize the network.

Advice for Enterprises Deploying NaaS Models

IDC believes that NaaS models are applicable for a variety of use cases. One leading driver for a NaaS deployment is a network refresh or expansion. NaaS models are particularly compelling for new network buildouts, where new technology such as Wi-Fi 6 and multigigabit or 10/25/50/100GbE switching is important. Another factor for NaaS models could be for dynamic environments where capacity needs change or where the potential for frequent future upgrades is likely.

As enterprises look to deploy NaaS, they should consider how the network infrastructure components and management systems integrate with their broader networks to ease the transition. Organizations

that are already using cloud-based management platforms for the LAN may be best positioned to take advantage of NaaS offerings.

Survey data results show that enterprises are also looking to NaaS to help respond to the business impacts of COVID-19. NaaS models allow enterprises to shift from capital expenses to operating expenses and can enable more flexibility in the environment. New capacity, new features, or innovative functions can be added or removed as needed.

Another key to a successful NaaS deployment is to ensure it meets the needs of the business. Technology purchasing decisions should not be made in a vacuum: Consider the goals of the business, such as initiatives that are driving new growth opportunities, and consider what networking components are needed to support them. Determine the best use of your IT and networking staff and enable them to focus on the business-enabling tasks. Aligning technology purchasing decisions with the needs of the business will help ensure the network is an important enabler of digital transformation.

CONCLUSION

Enterprises networks today are complex, and organizations have stringent demands from the business on what the network must enable. Many enterprises struggle to keep network components up to date to satisfy these business needs. Network performance problem identification and response is now equated directly with user experience. The more time IT spends on managing the day to day, the less time there is for business-enabling tasks. NaaS is a model that allows IT to focus on what really matters for its business.

NaaS models have a variety of benefits that have been outlined in this White Paper. Transparency, simplicity, and improved life-cycle services lead to better cost metrics and help ensure network usage aligns with business goals. This leads to overall benefits of increasing agility, reducing network complexity, and enabling organizations to have an optimized network that supports growing and dynamic environments. IDC believes that enterprise use of NaaS models will increase significantly in the coming years as more organizations realize these benefits.

About IDC

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