Winning at SD-WAN
The Story of How a Leading Logistics Outfit Adopted SD-WAN to Unshackle Operations and Drive Digital Transformation.
A major logistics brand was looking to migrate from its legacy wide area data network, and adopt the emerging software-defined wide area network (SD-WAN) technology.

This U.K.-based organization operates in more than fifty U.K. and several European locations. The business focuses on the third-party logistics (3PL) space, supplying warehousing and transport services to a range of well-known global brands, as well as to U.K. manufacturing and retail organizations.

The 3PL market typically follows a regional depot deployment model, with wide geographic coverage of warehouses and transport depots. While this case study is focused on the logistics business, many of the same considerations apply to other industries in terms of the overall approach to evaluating and selecting new technologies.

SD-WAN is a generic term that covers technology sold by a number of vendors; each with their own equipment, software, and licensing model.

Key Findings:

- SD-WAN provides greater flexibility to optimize digital services consumption, as well as enabling improved performance for applications, cloud telephony, video, and collaboration services.

- Observed reduction in TCO was 25%, even after accounting for installation delays and one-time infrastructure spending associated with the effort. The three- and five-year TCO outlooks are very favorable compared to traditional WAN deployment.

- The build out produced significant and measurable improvements in bandwidth and direct internet access routing. Lower latencies and reduced network hops further improved user experience, especially in latency-sensitive applications such as voice and video.

- As an overlay technology, SD-WAN is not necessarily more costly to implement and operate than conventional networks.

- While implementing SD-WAN (and potentially changing network providers and network routing technologies) has some risks, the benefits are significant and achievable.

Challenge

The data network is a key technology for any modern enterprise. It supports delivery of digital technology services for any organization. The local area network (LAN) and wide area network (WAN) infrastructure is a key component for access to public and private cloud services, as well as external data centers.

An organization’s ability to consume services such as Microsoft Office 365, Google, and other cloud-rich applications.
and data center-based applications effectively is determined in part by three main factors: the LAN, WAN, and Wi-Fi services, as shown in **Figure 1**.

![Figure 1. Key Components of the Network Infrastructure Layer](image)

*Source: GigaOm 2021*

**Figure 1. Key Components of the Network Infrastructure Layer**

The LAN/WAN infrastructure layer supports efficient service consumption. When inefficiently configured or operating at a suboptimal level, however, it can prove to be an impediment to user experience, productivity, and overall business efficiency.

The legacy “hub-and-spoke” network architecture the company used rarely provided sufficient bandwidth capacity to consume cloud-based services. To overcome those capacity and application performance limitations, IT often implemented additional external direct internet network access links to route selected internet traffic to consume cloud services. This resulted in service duplication operating in parallel with the legacy network.

Capacity upgrades to existing networks were often limited by the types of circuits available from the local provider. Simply increasing capacity would not resolve all these challenges as the legacy network was primarily designed to access corporate data centers, with internet traffic directed via the data center and a web proxy service. This setup resulted in multiple hops for external data traffic.

User frustration became more prevalent as increasing demand for video, collaboration, and IP telephony services were limited by current network capacities and routing. From a technical perspective, the lack of direct internet access was impacting application performance.

The desired business outcome was improved quality of service. The technical challenge encompassed the technology and supplier selection, as well as the physical network implementation and upgrade process.
Solution

IT leadership had a clear understanding of both the business and technological challenges, along with an appreciation for how SD-WAN technology could address them. However, the internal network team had no previous experience with SD-WAN technology selection and implementation.

WAN contracts are entered into typically for three- to five-year terms, partly for amortizing startup costs and partly because of the time and effort involved in implementation. The current network contract was due for renewal in 15 months, so this was the appropriate time to evaluate WAN technology.

The organization considered several approaches:

- Work with the existing network provider to evaluate a phased-in technology change
- Evaluate multiple network partners and technologies using internal IT resources
- Engage with an independent network evaluation partner to conduct an RFP process and accelerate project delivery

The company decided to engage a specialist—a U.K. network-selection consultancy— to define the nature of the challenge, formulate a tender document, and guide the company through the selection process, benefits analysis, and total cost of ownership evaluation.

This approach had several benefits, including:

- The network consultancy partner has current market knowledge regarding supplier capability, technology, and pricing
- The partner could manage the engagement process to accelerate time to decision, and generate business value more rapidly
- The partner could provide an impartial view and independent advice

This project would address the WAN layer of the technology stack as its most significant component. It would also optimize end-to-end services and review both LAN and Wi-Fi elements.

Process and Transformation

The company engaged the consultancy 15 months prior to the expiration of the current network contract to deliver a set of outcomes:
• Help develop a high-level network RFP document
• Recommend a shortlist of SD-WAN solution providers
• Specify a structured process to evaluate supplier, vendor technologies, and capabilities
• Provide a commercial overview of each supplier’s bid, summarize total cost of ownership, and compare it against current costs
• Assist with shortlisting suppliers based on a defined scoring matrix and key criteria
• Assist with negotiations to leverage optimal value

The additional objectives set by the logistics client for the consultants were to establish project delivery remuneration based on a fixed fee rather than percentage of contract, and deliver the supplier selection and evaluation phase within a 16-week period.

The targeted business outcomes were to enhance SD-WAN flexibility, capacity, and resilience; reduce network monthly operating costs and TCO over an initial three-year term; improve internet/cloud service quality; and amortize setup costs over the life of the project.

The project was scoped into five major phases. During phase 1, the RFP and supplier selection process, there was significant collaboration between the consultancy and client to develop an outline for the RFP. They also determined potential network solution providers.

Phase 2 involved supplier and technology review. This phase started off with a series of meetings with each supplier, to enable the client to reach an understanding of the company profile, core skill areas, and customers. The team then reviewed, critiqued, and adjusted the RFP to ensure everyone understood the requirements and they reflected new supplier input. Throughout these meetings, suppliers presented and refined their technical and commercial propositions to allow them to better understand overall requirements.

Phase 3 involved developing a shortlist of suitable suppliers and technologies. The consultancy requested best and final offers (BAFOs) from each supplier, presented as a structured report responding to key RFP criteria. The team developed a scoring matrix, as shown in Table 1, that recorded technology, cost, and service benefits to generate a value score for all supplier proposals.

Several suppliers independently proposed the Meraki SD-WAN solution as a best fit, which also aligned with the views of the internal IT team. During the RFP process, it became increasingly evident there were a variety of technical solutions and cost profiles for implementing SD-WAN they needed to better understand.

Table 1. Supplier Scoring Matrix
The teams made their final supplier selection during phase 4. They narrowed their options to two suppliers, which included the incumbent network partner. Ultimately, they chose the new vendor because its solution offered greater network capacity, active/active load-balanced primary and secondary circuits, and a lower-cost profile.

The team then moved on to phase 5—network implementation. After a brief site evaluation, they started installing new circuits and SD-WAN equipment alongside their current network.

They connected company data centers to the supplier’s core network first to enable a phased cutover, if required. That cutover approach was chosen to ensure 75% of all site network rollouts were complete before starting the SD-WAN migration. They first migrated a number of pilot sites to test technical cutover planning and timing.

**Result**

The migration to SD-WAN conveyed a number of benefits. The new SD-WAN is a significant component in the organization’s digital transformation strategy. It provides increased resilience and higher bandwidth. The load-balanced primary and secondary circuits yielded immediate benefits in terms of application performance.

The new contract delivered savings in terms of a reduced TCO compared to the legacy network, although the implementation timescales and costs were higher than projected due to one-time
installation issues at a number of locations.

But did they actually achieve their target business outcomes? In terms of flexibility, capacity, and resilience, SD-WAN delivered traffic routing flexibility, capacity, and resilience. The immediate increase in bandwidth and direct internet access routing provided visible and measurable benefits. Lower latency and reduced network hops improved user experience for latency-sensitive applications such as voice and video.

In terms of reduced TCO and network monthly operating costs, the initial project evaluation had forecast a saving of 38% over a three-year term. However, installation delays and additional one-time infrastructure and installation costs eroded the savings to 25%.

Overall, this SD-WAN migration project delivered on core business and technical objectives, though the team will have to perform additional work to optimize certain LAN elements and some of the Meraki equipment. Ultimately the organization should gain further efficiency by using LAN segmentation (VLAN) and enhanced-capacity LAN switching equipment. This new network infrastructure layer provides a solid foundation for the future of its digital transformation journey.

**Lessons Learned**

There are many observations and key takeaways from this SD-WAN migration project. First is the value of advice from an independent specialist. An independent network consultancy can help provide a structured project approach, accelerate time to value, and assist in managing the project.

These consultants engage in full-time market evaluation and multisector, multi-client projects, so they are well positioned to advise on current technology, vendors, and market pricing. Bear in mind, though, that it is important to set clear deliverables and expectations for any consulting partner.

Be prepared for a lengthy project timeline. Replacing a network is a significant project, and comes with a variety of challenges around physical infrastructure service provisioning. A 12-month project timescale is advisable if there are significant supplier and network technology changes involved across multiple locations.

There are risks involved as well. A change of network partner and technology involves installing a parallel network, so there will be a period of duplicate operating costs. This needs to be factored into the TCO and list of one-time costs.

There are also technological and physical installation delivery issues that can affect the dual operational costs further. These issues can erode projected savings. Establish a realistic value in the project evaluation to account for these cost factors.

The business impact of the changeover should be factored into the project plan as well. Any significant network/technology shift is unlikely to be seamless, and may well incur a period of network
downtime. Be sure to account for any changeover time and costs in the final RFP.

From a technological perspective, SD-WAN technology is now mature and well established. Most implementation partners have experience delivering solutions using one or more of the SD-WAN technologies. There are SD-WAN solutions available from a number of established network vendors, including Cisco, Meraki, Silver Peak, Viptella, Juniper, Barracuda, and Nuage. Each approach has its strengths and weaknesses. Make sure these are clearly understood as part of the technology selection phase.

Selecting the right partner is another critical step. Make sure your implementation partner has the necessary experience and skill sets to support your chosen SD-WAN overlay technology.

WAN providers can offer a range of managed services covering installation, monitoring, maintenance, and change control. Ensure you have included the appropriate services and SLAs as part of the support agreement. Ensure your partner can provide dashboard access and real-time network monitoring. Existing SNMP solutions may not be allowed access under the managed service contract.

And when it comes to determining and achieving time to value, set clear expectations in the business case. Network change is a major process involving multiple service providers. Infrastructure provisioning can be delayed by unforeseen factors. Establish application performance measures before and after the SD-WAN migration to ensure metrics are available to business and technology teams.

Moreover, the implementation is just the start of the journey. Moving an organization to SD-WAN technology is often just the beginning of an overall network services optimization strategy. Set up a plan of action to review application and services routing to ensure the correct routing of various types of data traffic. An element of network and application tuning will be required to optimize use of the selected services. Finally, do not forget to evaluate all aspects of network security as part of any transition to routing applications over SD-WAN.

About Vince Sparks

Vince Sparks has been in IT leadership roles for more than 30 years, delivering technology solutions to a variety of FTSE 250 public and private businesses. He has a broad range of experience in the manufacturing and logistics sector, including warehousing, distribution, aviation, rail, and container logistics.

Vince speaks regularly at vendor and community events to highlight case studies and promote emerging technologies. Key focus areas include infrastructure deployment, data center consolidation, private cloud, SDWAN, as well as security, compliance, data governance, O365, collaboration technologies, and business data integration tool sets.
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