COMMERCIAL & TECHNICAL COMPARISON: MPLS vs SD-WAN

This document illustrates the actual commercial and technical benefits that SD-WAN delivers when compared to a similar MPLS solution. The figures presented herein were prepared for a UK based SDWAN Solutions customer with an existing MPLS network, to demonstrate the commercial benefits of our SD-WAN solutions, and are accurate as of February 2022.

PROJECT BACKGROUND

The customer is a UK based manufacturing and distribution company with just over 200 sites throughout the UK. They currently have an MPLS network. They approached SDWAN Solutions to initially assist with connectivity for a new site, as lead times for MPLS were too long, and would delay the opening of the new site. After a successful POC, the customer ordered an SD-WAN solution for the new site and a DC location, as well as our hosted orchestrator service.

The installed SD-WAN solution was delivered on time, using zero touch deployment, allowing the site to open as scheduled. The site has operated with 100% uptime from day 1.

COMPARISON WITH MPLS

A new MPLS solution has been costed (October 2021) and included as a control to provide a further basis for comparison. Several assumptions have been made to complete the analysis, these have been made on the basis that they are reasonable and based on figures that represent a real-world solution.

MPLS

- 20mbps at each site
- Single connection
- No back-up
- Router included
- 36 month contract

SD-WAN

- 20mbps SD-WAN licence at each site
- Dual connectivity – FTTC and 4G
- Fully managed service
- All hardware included
- SD-WAN licences to support 200 sites at 2 x DC locations for redundancy
- Hosted orchestrator to support 200 sites
- 36 month contract

COMMERCIAL ANALYSIS

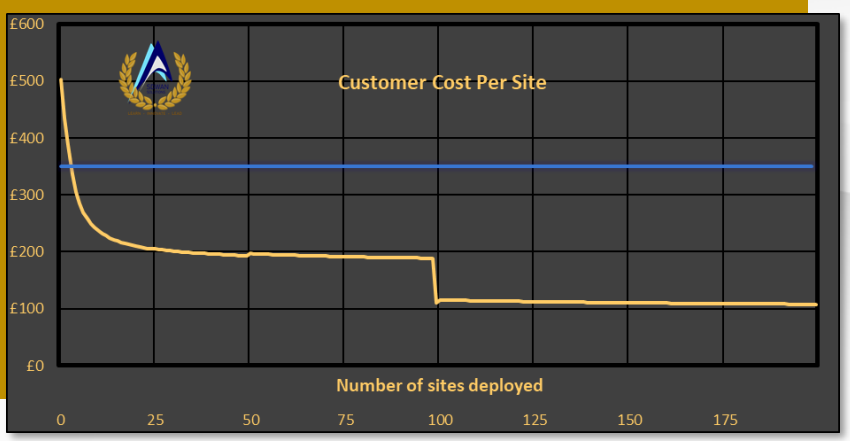

Figure 1

Figure 1 depicts the variation of cost per site per month as the number of deployed sites increases.

- The **BLUE** line shows the monthly cost per site of an MPLS network, this remains constant at £350 per site per month.
- The **GOLD** line shows the monthly cost per site of a complete SD-WAN network from SDWAN Solutions.

EXPLANATION OF COSTS

Economies of scale with an SD-WAN solution is clearly demonstrated as the cost per site decreases as the number of deployed sites increases. This is due to two main factors:

- The first deployed sites are more costly due to the book-end requirement with SD-WAN for a 2nd site and the required orchestrator hosting. The subsequent sites utilise the existing infrastructure, have a diluting effect on the cost.
- The significant reduction in cost per site per month at the 100-site mark is due to the volume-based SD-WAN licence cost reduction in the monthly per site cost. The same step-change effect can be seen in figure 2.
- We must also draw attention to the rapid reduction in monthly cost per site to the left-hand side of *Figure 1*. Meaning that even at a relatively small number of deployed sites, there is a significant reduction in the monthly per site cost. At a deployed site count of 31 an average monthly cost of £200 per site can be achieved, vs a monthly cost of £350 for MPLS.

SAVINGS OVER THE CONTRACT TERM

- Moving just 31 sites from MPLS to SD-WAN will result in savings of £172,000 over 36 months.
- Moving all 210 sites from MPLS to SD-WAN will provide a saving of £1.74Million over 36 months.
- The above savings are based purely on hard cost savings, however, savings increase even further when soft cost savings are added.

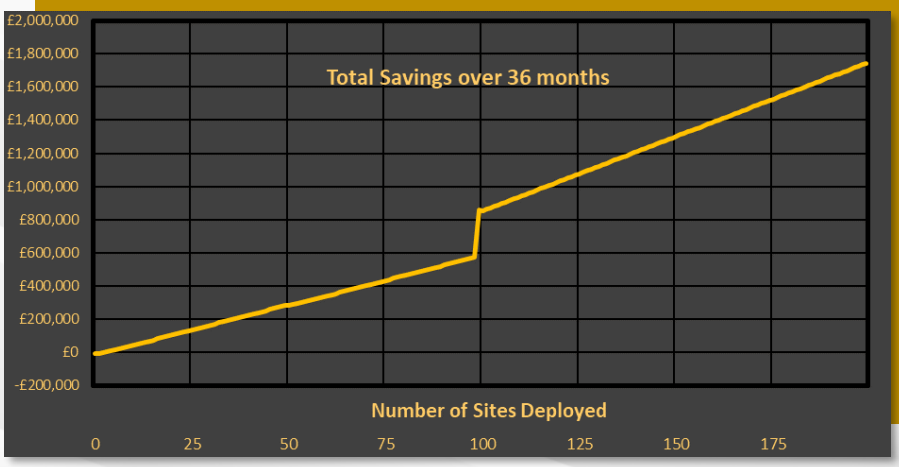

Figure 2

HARD COSTS vs SOFT COSTS

- Leveraging encryption and Active/ Active paths, organisations can increase adoption of public Internet links while reducing their use of their expensive private WAN circuits. No need to pay for idle backup circuits that are rarely used.
- Eventually retiring routers at End-of-Life or when a WAN refresh approaches, can lead to both short-term savings and accrued long-term savings through reduced CAPEX. Routers are not always required in new installations thereby significantly reducing set-up fees.
- IT personnel are not needed at every location and there's no need to physically visit remote sites for deployment or policy changes.
- Customers no longer need network operators to configure individual WAN routers when changing policies — saving additional expense.
- Centralised policy management and roll-out. Routine changes do not need to be handled by network engineers with deep, specialised knowledge. This frees up engineering staff to work on business enriching projects, reduces human error, speeds up policy changes and improves system availability and reduces IT Department travel expense and time.
- Built in resilience means that branches stay operational even if a main connectivity medium fails. Users can continue to work i.e. no lost man hours or site downtime.

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	MPLS	SD WAN
Connection	Single link (no resilience) or active link & passive back-up connection (Double the costs with 1 link remaining idle)	Multiple connectivity methods - leased line, ADSL, FTTC, 4G aggregated to create a virtual circuit.
Installation timescales	90 days +	5 minutes to a few days, ability to utilise existing on-site connections regardless of type, add and remove connectivity on demand.
Installation	Disruptive.	Hybrid overlay built on existing infrastructure with sub 5min disruption on switchover.
Telecoms provider	Single provider limited to their network presence in each location, and connection to their own Points of Presence.	Access to 1000's of providers networks worldwide ensuring you always have the best connectivity option in each location.
Multiple provider solutions	Requires NNI connection between all providers adding latency and cost.	Makes use of any provider connections.
Deployment	Via Telco only.	Zero touch deployment of pre-configured devices is available, operational within a few minutes.
Design	Hub and Spoke.	Dynamic fully meshed network, with conduits that are automatically created on demand and then automatically closed when no longer required, reducing overhead.
Visibility	Third party monitoring.	Complete visibility down to application and user via SD WAN monitoring software for every site on the network.
Security	Closed network, vulnerable to physical link hack.	AES 256 encryption - end to end security.
Performance	Fixed route, subject to degradation.	Application performance consistently monitored & enhanced. Adjustable prioritization for application, file and bulk traffic. Intelligent traffic paths, including mid-session line disruption around line loss with zero impact to the conduit (aggregated lines). Ultimately allowing your packets to travel as Pure liquid data based on the priory of those packets.
Cloud connectivity	Via a data centre.	Direct thereby reducing latency and bandwidth required at DC or hub locations.
Business continuity	Double cost.	Inherent due to multiple bandwidth types used.
Disaster recovery	Additional facility and connectivity required.	SD-WAN devices can be moved to a new facility and begin using on-site connectivity instantly with minor configuration or a virtual instance can be loaded at a new facility.
Commercials	Costly.	Savings of 15% - 60% compared with MPLS.
Routers	Required.	Not always required.
IT staff	Required on site for most installations.	Remote zero touch installation, can be managed by a single resource, without the need for technical staff on location.
Policy changes	Require Telco to make policy changes per router, charged per router, 10-day timescale.	Policy changes can made to all sites instantly and simultaneously.
Technology	MPLS is expensive and outdated technology, no longer fit for purpose for cloud applications.	Commercially attractive, fit for purpose advanced WAN technology, flexible, scalable and resilient.
Real time applications	Predictable.	Slight variance.
Fit for Video and voice applications	Yes.	Yes.
Upgrades	Via MPLS Telco only.	Via any connectivity option, from any Telco.
Proof of concept available	No.	Yes.
Routing	Static per session.	Intelligent routing per packet.
WAN Optimisation	Additional vendor solution required.	Yes.
Security	Additional vendor solution required.	Virtual instances of leading security products from Check Point, Palo Alto, Netskope and Zscaler can be integrated with and hosted on the SD-WAN device, further reducing hardware required onsite. Most SD-WAN software includes a built-in stateful firewall.
High Availability	Optional.	Optional in design, some SD-WAN devices have additional fail-to-wire capability.