Surging Activity in the WAN Space – But Don't Let the Buzz Cloud Your Judgement

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Biography

Michael Wood is vice president of marketing for VeloCloud Networks (www.velocloud.com), responsible for worldwide marketing, revenue generation, channel and sales enablement and communications. He has more than 20 years of leadership and management experience in the networking industry.

Prior to VeloCloud, Michael served as vice president of product management and marketing for Akamai Technologies' Cloud Networking Business Unit. He also was an executive in residence, and is currently an adviser, for Plug and Play Tech Center, a startup incubator and accelerator. Early in his career, Wood was with StrataCom as a senior member of the technical staff. After Cisco acquired StrataCom in 1996, Michael spent 15 years with Cisco in various positions, culminating in the director of product management and marketing role for the multibillion dollar branch office integrated services router business for enterprises and service providers.

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Abstract

After fifteen quiet years, the WAN is in a state of flux – because it touches everything, WAN architecture and design is central to an effective business strategy. In this article, the author explains the nine key steps to ensuring a future-proof WAN.

Introduction

It was not so long ago that we were being exhorted to "align IT with the business objectives." It was a sign of maturity at the end of the pioneering days of IT for IT's sake. But digital technologies have been fundamentally transforming business processes and strategies, and not just in terms of newer, Internet-based operations like Amazon, Uber and AirBnB. A growing number of bricks and mortar companies are embracing digital technology for their market-facing operations – even when their back offices are still invoicing business partners by snail-mail.

This calls for another rethink of IT strategy. Companies that expect the IT department to wait while the next round of business objectives are being discussed will soon find that the tail is wagging the dog. It is no longer just a question "how can IT help?" but rather "what can IT make possible?" This calls for a closer fusion between IT strategy and business strategy, perhaps best described as a digital

business strategy. For any large or dispersed operation, WAN architecture and design will be central to such a strategy, because the WAN touches and links every part of the organization.

Can WAN architecture accommodate such change? Between the 1980s and 1990s the WAN saw major technological changes: TDM, Frame Relay, ATM, MPLS and later Carrier Ethernet. Since that time little had changed in the fixed WAN, even as cellular was forging ahead from 1G to mobile 2G, 3G to LTE.

Today's business requirements are dictating a demand for even greater agility to adapt to rapid changes in the market, the economy and society. So the WAN too must be able to respond quickly to business and technological changes. We are no longer talking about a fixed system like a road network linking scattered sites: the need now is for a flexible and responsive software-defined WAN, or SD-WAN. Rating the WAN

How do we judge responsiveness? It is determined by the WAN's ability to maintain certain criteria in the face of rapid changes in the business environment. These criteria include:

1. **Acceptable levels of application performance and availability**. This requires not just the acceleration of the accessibility and delivery of applications, but that voice and video traffic should arrive at the right speed without issues.

2. **Transparency**. The ability to take raw data and synthesize it into a simplified monitoring and management function that allows rapid analysis and remediation of problems is key. The more complex the system, the more important it is to clearly distill network activity.

3. **Security**. Network assets need to be protected at all costs and IT managers need to have the ability to tailor security to need and criticality, without losing agility.

4. **Cost effective WAN services** – it goes without saying.

To get an idea of the relative perceived importance of these criteria, Dr. Jim Metzler, co-founder and principal analyst at Ashton, Metzler & Associates, did a survey on top factors as perceived by business – *see Figure 1*.

As expected, security was rated as the number one factor – but cost, real-time applications and access to public cloud services followed quite closely. Of these the most dramatic increase was for access to public cloud services – an evolution that only began in the last couple of years.

How well does the current WAN architecture meet the needs outlined in *Figure 1*? In reviewing *Figure 2*, we see that a mere 3% of all respondents are totally unsatisfied. However, in view of the critical importance of the WAN to business today – and even more so tomorrow – a more telling observation is that only a third

of the sample was more than "moderately satisfied." The real significance of this fact is that it suggests that at least two thirds could be open to exploring alternatives, such as SD-WAN.
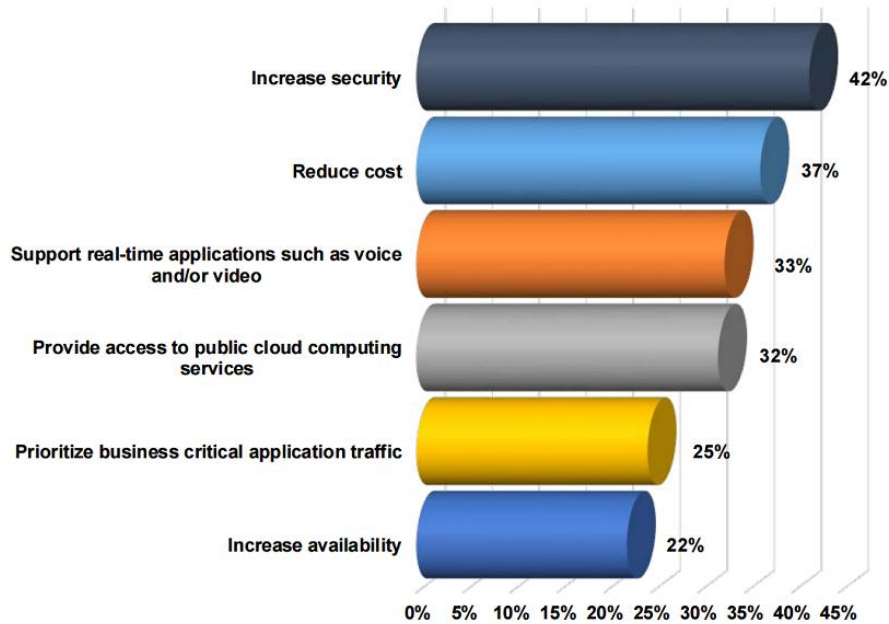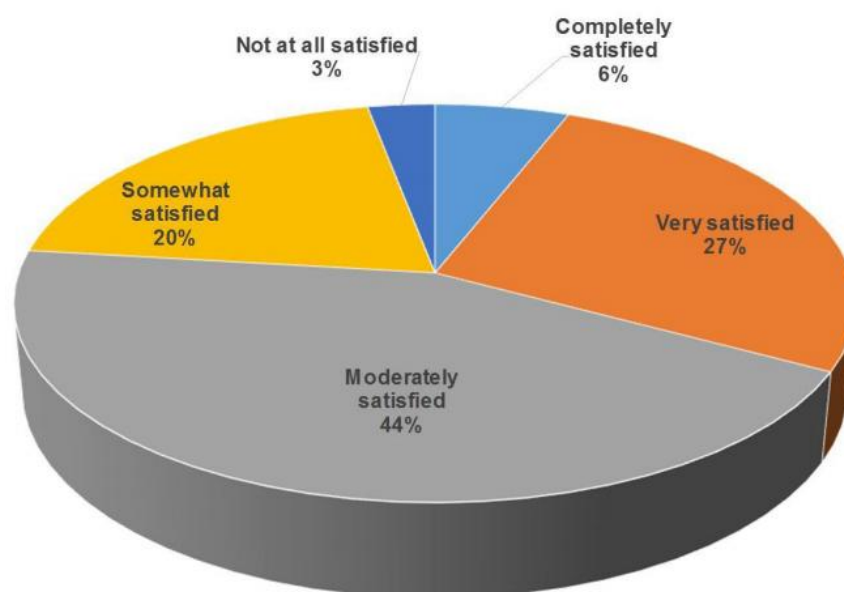
Figure 1: Top factors impacting the WAN

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Figure 2: Satisfaction with current WAN architecture

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Also noteworthy in the survey data, is the topic of primary concerns. The table in Figure 3 compares MPLS and Internet connectivity and shows the complementary nature of the two services. Security was the biggest concern for the Internet, much more so than for MPLS, where cost headed the list. Uptime and latency took second and third places in each case while lead-time to implement new circuits was a much higher concern for MPLS than for Internet.
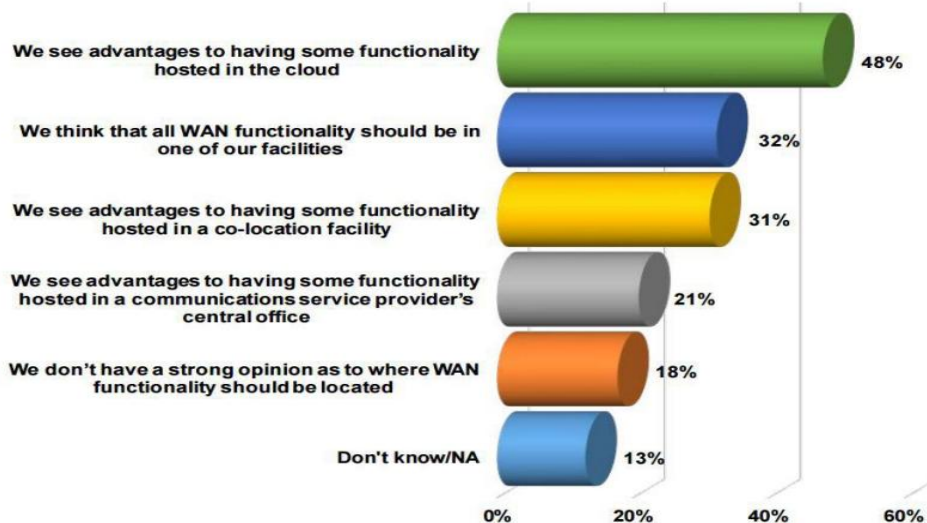
Figure 3: Primary concerns with WAN services

Concerns with MPLS	Concerns with the Internet
Cost	Security
Uptime	Uptime
Latency	Latency
Lead time to implement new circuits	Cost
Security	Packet loss
Lead time to increase capacity on existing circuits	Lead time to increase capacity on existing circuits
Packet loss	Lead time to implement new circuits
Jitter	Jitter

SD-WAN today

The last big evolutionary change to the WAN was MPLS, but now we suddenly have a lot of options for flexibility with the introduction of software-defined concepts in the form of SD-WAN. How do we find our way around these?

One of the key questions is about where the SD-WAN functionality should be hosted – in the cloud, on premises or where? *Figure 4* shows the result of Dr. Metzler's survey (NOTE: The survey allowed multiple answers; aggregate percentages total more than 100%).

Figure 4: Preferred locations for hosting WAN functionality

We see advantages to having some functionality hosted in the cloud	48%
We think that all WAN functionality should be in one of our facilities	32%
We see advantages to having some functionality hosted in a co-location facility	31%
We see advantages to having some functionality hosted in a communications service provider's central office	21%
We don't have a strong opinion as to where WAN functionality should be located	18%
Don't know/NA	13%

The most significant finding is the large proportion – nearly half of those surveyed – who were open to hosting functionality in the cloud. Years ago, this was unheard of as the preference was to house key services on-premises. In comparison, one-third of respondents still want all WAN functionality in-house. Other options include hosting in a co-location facility, a CSP's office or other.

In-house hosting supports the DIY mind-set that still predominates. When Dr. Metzler surveyed preferred implementation options, 54% wanted to do it themselves, and yet 42% were happy with a managed service and 27% a NaaS offering. This larger overall total reflects the number of managed services currently being marketed, plus the broader acceptance of outsourcing in the IT world today. This openness also means that people are more willing to change vendor, increasing the competition for market share and to continuously deliver an ever expanding list of services, as seen in *Figure 5*.
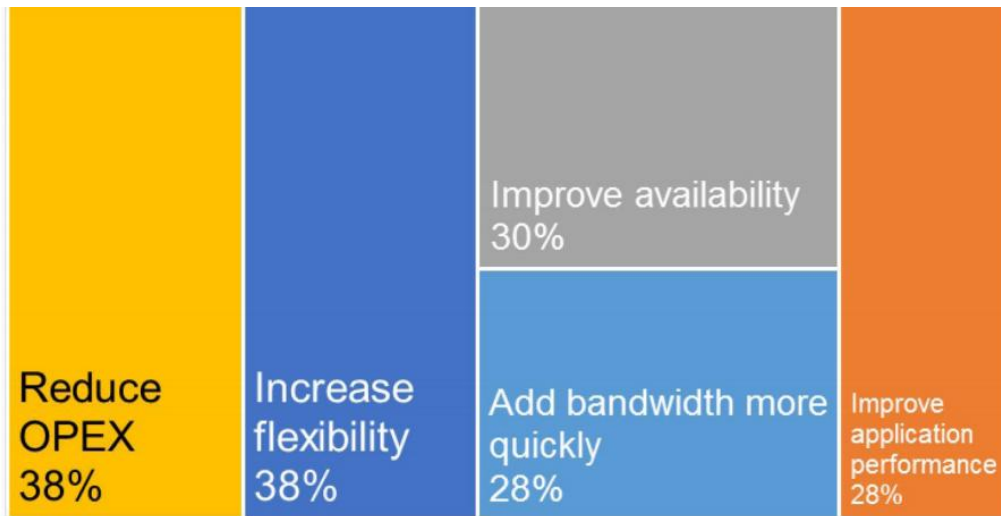

Figure 5: Openness to new vendors

In the past, people were more cautious about new technology and tended to wait until it became available from their preferred vendor: Figure 5 shows that this preference is still true and yet 22% would actively look for other vendors, and a further 27% are prepared to make some effort to explore elsewhere. This is a significant shift in the conservative culture that has dominated the WAN this century: it suggests that people are exploring options and are more receptive to new technology like SD-WAN.

How clear are the benefits from SD-WAN? Metzler asked the same sample what were the perceived drivers and inhibitors – see *Figures 6 & 7*.
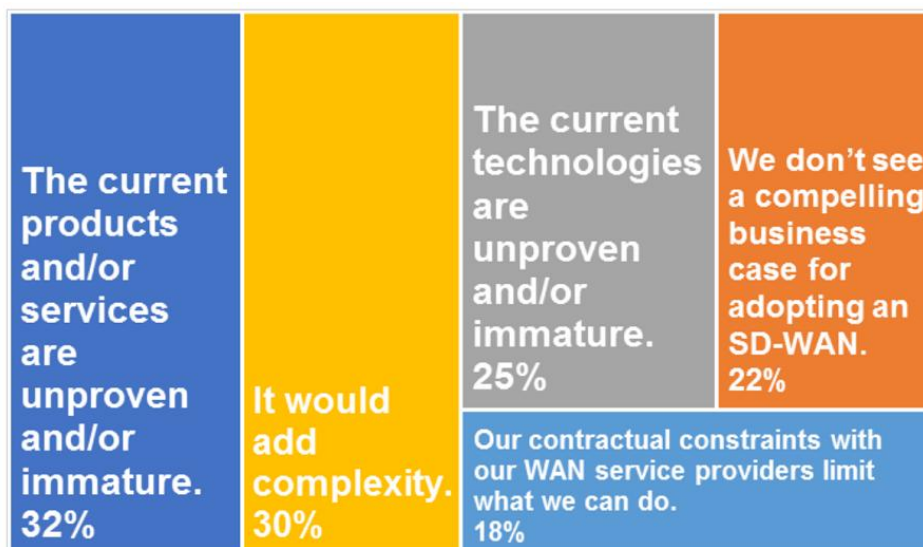
Figure 6: Drivers of SD-WAN adoption

Reduce OPEX 38%

Increase flexibility 38%

Improve availability 30%

Add bandwidth more quickly 28%

Improve application performance 28%

The drivers were clear and expected (see *Figure 6*). This is a sign of a consistent, mature market proposition. Unlike the birth of most new technologies when everyone is articulating varying market messages, the benefits of SD-WAN seem to be well understood and this is no doubt a consequence of the success of software-defined networking in the data centre. People understand the basic principle, but that does not mean that they accept that it is ready for market – see *Figure 7*. Here we see a significant resistance with a third of those surveyed not thinking the products are proven enough, and even a quarter are still not sure that the technology is mature enough for adoption in their network.

Figure 7: Inhibitors of SD-WAN adoption

The current products and/or services are unproven and/or immature. 32%

It would add complexity. 30%

The current technologies are unproven and/or immature. 25%

We don't see a compelling business case for adopting an SD-WAN. 22%

Our contractual constraints with our WAN service providers limit what we can do. 18%

Nearly a third also fear that it would add complexity. Too often a new solution that has a claim to make things more simple turns out to be difficult to implement: the path to future simplicity itself turns out to be complex. This is clearly a concern that vendors must address, and the ones that can promise a simple, seamless transition to SD-WAN, ones that really will make life easier, will have a big advantage. An additional point is the 18% limited by contractual constraints: this is surprising as a typical pilot SD-WAN scheme does not require significant changes like ripping out MPLS links, and it is not the sort of upgrade that would be made without several months of exploratory pilot projects.

Ten considerations for SD-WAN implementation

In summary, there are ten considerations when planning to adopt SD-WAN :

1. **Location of WAN functionality** – if you opt for cloud, then it will determine to which providers you will speak.

2. **Customer Premises Equipment** – do you prefer to install hardware or utilize VNFs.

3. **Use of cellular services** – adds great flexibility, but also has OpEx implications.

4. **Visibility** – for monitoring, troubleshooting and maintenance.

5. **Security** – this must increase with adoption.

6. **Real time application support** – a fundamental driver for remote offices.

7. Cost and CapEx/OpEx models – for example, pay-as-you go services.

8. **Policy** – what is the level of difficulty in implementing business policies.

9. **Quality of Service** – Optimization of jitter, latency, etc. to match business needs.

10. **Automation** – the ability to roll out changes to a wide range of branch office sizes.

… and nine steps to getting there

1. **Identify the focus** – Branch offices, mobile workers, IoT, etc.

2. **Identify the goals** – establishing a realistic prioritization of considerations as not everything can have the same level of priority.

3. **Agree on the extent of the analysis** – this could mean agreeing on deadlines, limiting the length of reports and not getting mired in detail.

4. **Management buy-in** – Make sure that management agrees and accepts the above focus, goals and depth.

5. **Choose an effective project team according to goals and focus** – identify the necessary members of the team to execute the project appropriately and assign respective members to work on the project.

6. **Choose vendors** – Identify a clear focus and goals and choose vendors based strictly on this criteria.

7. **Evaluate alternative solutions** – determine if there are other solutions that may solve the existing problems.

8. **Manage existing contracts** – consider how existing contracts and their related costs will impact your selection and time to deploy.

9. Build a winning business case on the above.