SD-WAN SELECTION CRITERIA

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INTRODUCTION

The past 20 years have seen many changes in I.T. as we see a shift from Physical appliances to virtual; manual management to Automated and Centralized applications to Distributed applications across multiple clouds and SaaS. In addition, the scale of devices that will connect to the network is about to explode as IoT devices become more prevalent.

Where virtualization and centralization brought increased agility to the world of server and storage infrastructure, Software Defined Networking (SDN) is helping transform traditional networking technologies, thereby reducing cost and complexity, and lowering risk and compliance concerns through secure and resilient network infrastructure technologies.

SD-WAN creates a virtual overlay on top of the underlying transport allowing the organization to be transport agnostic. Private circuits such as MPLS with provider SLAs may be used in conjunction with more economical Broadband circuits which can be deployed quickly for a new branch location.

Using SDN technologies we can provision and manage the network centrally rather than relying upon per device configurations which are difficult to manage and prone to human error. By using SDN technologies we can increase the network availability by cutting down on avoidable failures and provide a better user experience.

TRENDS AND CHALLENGES FOR THE WAN

The network must evolve to accommodate the applications and users who depend on it. As the applications move to multiple clouds (IaaS, SaaS, Private, Public), and the users begin to work from branches with Direct Internet Access (DIA), this added demand puts strain on the corporate WAN that is expected to provide the same level of service as the LAN. The IT team must balance user experience with costs for private circuits and devices, resiliency, visibility, control and security of the WAN.

Interestingly, a SD-WAN deployment is one of the few IT projects where a positive ROI can be realized if the plan includes replacing expensive private circuits with more economical broadband circuits.
SD-WAN CRITERIA

When choosing a SD-WAN solution, what are some points that should be considered? We are going to begin with the assumption that each option will provide the basic features such as:

- **Continuous Link Monitoring**: the SD-WAN will monitor all links.
- **Dynamic Multi-Path Optimization**: The SD-WAN will monitor all links and dynamically adjust traffic flow based on the quality of the link (brownouts – jitter, latency, delay, loss etc).
- **Data Path Encryption**: The SD-WAN will encrypt the data traffic with AES 256.

Let’s consider some other aspects:

- **Compliance**: Does your organization have any compliance concerns and is the SD-WAN solution able to address those concerns? Is the cloud hosted management/controller suite compliant? If not, then do they offer an equivalent on-premise deployment option? Is your organization ready to deploy and manage that solution with the understanding that it should be deployed in a resilient fashion across multiple datacenters? Is your team prepared to patch and update the SD-WAN virtual machines regularly?
- **Security**: Does it offer services (natively or with partners) that comply with your security posture? Does it offer network segmentation, so you may classify and separate traffic from Guests, Corporate traffic and PCI, HIPPA or SOX compliant traffic? Does it offer additional security services such as Layer 4 or Layer 7 firewalling, Intrusion Prevention, URL filtering, DNS and Anti-Malware protection?
- **Flexibility**: Does it offer service-chaining or APIs to work with 3rd party devices that are being used in your network?
- **Agility**: Does it offer Zero Touch Provisioning to quickly deploy new edge devices? Can they be virtual or an appliance?
- **Migration**: How easy would it be to migrate to the new SD-WAN? Can any of your existing devices be utilized as-is or with an upgrade of licensing and memory?
- **Application visibility and classification**: Is it able to classify the applications that are critical for your organizations and deploy policy accordingly? The devil is in the details and the due diligence here will go a long way in ensuring that the correct solution is chosen. As part of the WAN upgrade process, please identify the critical apps for your organization so that detailed design discussions can be based on your environment.
- **WAN optimization**: Increasing bandwidth does not resolve any issues being caused by the latency from long distances. Does the solution offer just TCP window optimization or does it go beyond with advanced features relevant to your application mix?
- **Cloud Access and Optimization**: Does it offer access to the cloud that are important to your organization? Is it just IaaS (AWS, Azure etc.) or also SaaS such as Office365 and Salesforce?
• **Routing Protocols**: Which routing protocol is being used in your LAN environment and is it supported by the SD-WAN vendor? Would it add complexity to perform mutual redistribution on redundant devices across the network?

• **Forward Error Correction (FEC)**: adds a packet loss recovery packet in the stream. The number of these packets are variable and may be dynamic based on circuit conditions.

• **Packet Duplication**: Duplicate packets are sent on the redundant circuits and the remote SD-WAN device re-arranges the packets stream with the first received packet. This ensures a better application experience during circuit brownouts or blackouts.

• **Cost**: As mentioned earlier, a SD-WAN deployment may have a positive ROI. When comparing costs, ask for the total TCO of each solution including hardware, software, licenses and ongoing support.

**CONCLUSION**

Choosing between the various SD-WAN vendors can be a difficult task as it is a fragmented and highly competitive marketplace. Understanding your organization’s needs and mission critical apps and how they will be impacted by SD-WAN is critical. There are many features but only a select few may be applicable for your organization and understanding your needs is critical for those discovery discussions.

An important aspect of any SD-WAN solution is that the design, deployment and management of the entire WAN can be performed from a single pane of glass with the network acting as a holistic system, not a group of individual devices. The entire network can be configured based on policies – security, QoS etc. The increase in user satisfaction and responsiveness to the demands of your organization can make modernizing the WAN a worthwhile decision.