TRANSFERRING TERABYTE-SIZED FILES QUICKLY IS NO PROBLEM WITH SD-WAN

Real-time transmission of terabyte-sized files and simultaneous maintenance of business services led to implementation of SD-WAN.

INDUSTRY

CONSTRUCTION AND ARCHITECTURAL

CHALLENGES

- Poor user-experience in transmitting terabytes of data quickly and securely during business hours
- Limited existing bandwidth is maximized, but remains slow and not optimized
- Inefficient access to applications hosted on Microsoft Azure, limiting the company's ability to move additional applications to the cloud

RESULTS

- Gained ability to transmit mega-sized documents during working hours while simultaneously supporting all forms of unified communications
- Increased bandwidth between 2X and 4X, depending on size of site
- Dramatically improved customer and employee network user experience
- Reduced deployment times for new sites from months to days
- Enabled centralized network visibility and management

Problem Situation

KLM, Inc. manages over 50 office sites worldwide, with branch locations in many well-known countries worldwide. Employing over 50,000 people, it needs a robust, dependable, and secure network that can support the needs of all employes, regardless of geographical location.

Many of KLM's branch sites are located in remote areas where connectivity is difficult to obtain. It is forced to depend on whatever circuit is available, which is limiting given the company's reliance on transmitting large data files and facilitating communication across the organization.

KLM retains large amounts of data in the form of visual and highly complex pictorial scans as well as extensive data on the type of materials, architectural drawings, etc. of the area in which it operates. Because it depends on applications that take three dimensional scans of the environment on a regular basis as well as architectural-type drawings, the results are terabyte-sized data files that must be stored locally and transmitted to KLM's primary data center, which are then analyzed to help KLM make decisions on how it operates and best provide service to its customer base.

Coupling the unified communication requirements of its employees with network needs that included access to cloud applications such as Office 365, telepresence, ERP applications like SAP, and a VoIP infrastructure, and to transmit huge files to centralized locations, KLM's legacy network was limiting productivity and efficiencies. KLM's largest locations had 500 - 600 employees on-site, supported by a primary 45MB circuit. To augment this, KLM also used microwave circuits that would add another 25MB of bandwidth. Even with an aggregate of 70MB of bandwidth, it was not enough to support simultaneous files uploads and downloads, VoIP calls, and regular email communications. Being a construction and architectural-like company, most of the scanned data of the environment is centralized and regularly sent to the data center. This data is in terabytes and existing links did not suffice.

"SD-WAN has completely transformed the way we do business now, allowing our employees to gain efficiencies that couldn't be obtained with a legacy network."

JOHN SMITH
MANAGER OF GLOBAL NETWORK OPERATIONS, KLM, INC.

To help remedy this solution, KLM hosted many large files at on-premises data centers, that also hosted locally used applications. All data transmissions had to go through KLM's firewalls and the terabyte-sized scanned files were transmitted at night to allow for VoIP and other operations to access the available bandwidth during regular work hours. IT was plagued by legacy routers and manual QoS policies. Even then, a single file transmission could take hours to complete. It quickly became apparent that this was not a scalable or long-term solution for KLM, especially when it realized that much of the expensive bandwidth it'd already purchased was overutilized.

Solution Selection and Implementation: KLM, Inc. and VMware SD-WAN by VeloCloud

KLM needed to make a change to its network that would allow its terabyte-sized files to be uploaded and downloaded in near-real-time to enable better business practices, as well as enabling employees to take full advantage of the benefits provided by cloud applications.

Initially, KLM was not seeking internet circuits as a way to augment its existing business infrastructure. Its primary objective was to maximize the existing bandwidth it was currently using with MPLS. As part of its due diligence, KLM evaluated many solutions that claimed the ability to optimize available circuits, such as WAN optimization technology, but none were able to deliver on their promises.

KLM was then introduced to VMware SD-WAN™ by VeloCloud® and initiated a proof of concept (POC) to determine if the platform would satisfy KLM's network requirements. The POC was extremely successful, leading KLM to expand the SD-WAN deployment across its entire organization.

VMware SD-WAN includes the VMware SD-WAN Orchestrator by VeloCloud, a single pane of glass for centralized network visibility and management, utilization of VMware SD-WAN Gateways by VeloCloud to gain global access to cloud-based applications, and VMware SD-WAN Edges by VeloCloud at each job location. The VMware SD-WAN Gateways provide optimized access to Microsoft Azure and Virtual VMware SD-WAN Edges are spun up in the cloud computing service platform to enable access without a dedicated VPN.

With many of the organization's MPLS contracts set to expire, the timing for a SD-WAN migration was right from an implementation perspective. As contracts expired, KLM was able to negotiate renewed MPLS contracts that included competitive rates on its private lines, as well as a supplement of internet circuits that included direct, microwave, and local bandwidth.

VMware SD-WAN's transport agnostic status allowed the entire cloud-delivered SD-WAN solution to be quickly integrated into the existing network infrastructures. The increased bandwidth and connectivity to and between each site enabled a centralization of servers and applications. At this time, KLM was able to also centralize its systems on Microsoft Azure, using VMware SD-WAN to directly connect to the platform without having to initiate a dedicated VPN tunnel.

"KLM implemented VMware SD-WAN to optimize available circuits at our various locations. But we soon realized that we needed to make VMware SD-WAN the cornerstone of our future enterprise WAN architecture."

JOHN SMITH
MANAGER OF GLOBAL NETWORK OPERATIONS,

Bandwidth Increases Between 2X and 4X

The first benefit that KLM realized was the massive increase in bandwidth and transmission speed that SD-WAN was able to provide. With its new carrier and MPLS contracts, KLM was able to implement two 100MB circuits at its largest site, and a single 100MB broadband line at each of the smaller sites. On the first few days following implementation, as it transmitted the onslaught of large volume, terabyte-sized files, bandwidth was fully utilized. But as time went on, bandwidth utilization declined to what would become normal levels.

The difference between the bandwidth utilization before SD-WAN implementation and after was while bandwidth doubled, and in some locations, quadrupled, it was now simultaneously supporting all network traffic that couldn't be supported before such as VoIP voice traffic and video communications, as well as the large file transfers during work hours.

Improvement in Business Performance

KLM relied heavily on its massive stores of data to run its business. Saved three-dimensional architectural information needed to be analyzed on a regular basis to help the company make decisions, plan for safety and make future plans. Without enough and reliable bandwidth, KLM could not collect the information in a timely manner as it needed to wait until off-hours to make sure it transmitted without disrupting the rest of the network.

While it was impossible before SD-WAN to send the architectural plans during work hours due to the impact transmitting mega-sized files poses to a network, SD-WAN changed that impediment by using VMware SD-WAN Dynamic Multipath Optimization (DMPO) to steer across all network circuits. DMPO allowed application prioritization and sub-second packet steering during brownouts to ensure secure, fast, and seamless delivery.

Moreover, all KLM had to do was to state the business outcome it desired, and with a few clicks with VMware SD-WAN Orchestrator, its applications were prioritized for optimal user-experience, eliminating the need for manual QoS. VMware SD-WAN Edges have completely replaced routers on the WAN side for most sites.

Dramatic Improvement in User Experience

Prior to the SD-WAN implementation, KLM employees would often experience jitter and latency on phone calls, and file transmission would often take hours, delaying work flows. The deployment of SD-WAN was seamless and transparent to the KLM workforce, changing the communication experience for users nearly overnight. The common question the IT team fielded before deploying SD-WAN was "What's wrong with the network?", but after SD-WAN, the team began hearing "What happened to the network? It's going so fast."

Maximize Benefit of the Cloud with Microsoft Azure

To further simplify its business operations and improve the user experience, KLM made a strategic decision to migrate all its custom applications and test and dev environments to Microsoft Azure, and maintain a hybrid data center environment with some applications in the public cloud and some in its private data center. With VMware SD-WAN, KLM was able to directly connect from branch locations to Microsoft Azure in a simple, secure, and scalable manner with Virtual VMware SD-WAN Edge.

Instead of all sites backhauling to the data center and then connecting in to Microsoft Azure, each communicated directly. With the Virtual VMware SD-WAN Edge, KLM sees even greater declines in latency than with other express route circuits, allowing KLM to enjoy better performance with just a basic Internet connection.

Deployment is Simplified and Speedy

With most of its sites in remote areas, finding a reliable connection can be extremely difficult, often delaying the ability to deploy in a short period of time. However, with VMware SD-WAN, KLM was able to quickly deploy sites by using any connection available, including microwave or wireless broadband, until a dedicated circuit could be provided. This regularly reduced deployment time from a period of three and a half or four months to days.

In addition, existing sites could be transitioned to SD-WAN in short order by simply connecting the VMware SD-WAN Edge to an existing transport, allowing the VMware SD-WAN Edge to communicate with the centralized VMware SD-WAN Orchestrator, and obtain its new configuration. Or the VMware SD-WAN Edge could be configured before leaving the main office and just plugged into the existing on-site network. The cutover was seamless, normally taking about an hour, with no downtime incurred to migrate from legacy router environments.

Ease of Operation

While KLM was initially seeking just to utilize all its existing circuits and reduce wasted bandwidth, it gained much more. What it didn't expect was to ease the management of its operations. Using a pure software-defined network platform with centralized controls allowed KLM to more easily manage its entire environment in a proactive manner, troubleshoot without a truck roll, and remediate without the need for a highly trained and expensive technician on-site.

With its legacy network, KLM used Cisco routers at each site, but they were difficult to configure and manage as each change had to be done so individually. Technicians had to travel to each location and manually make changes, which was costly and inefficient. Using VMware SD-WAN, KLM was able to replace all Cisco routers with VMware SD-WAN Edges and create centralized policies that could easily be modified and populated across the entire network from a centralized location.

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