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Limited broadband availability abroad challenges WAN connectivity

Limited broadband availability in emerging markets often makes wide area network (WAN) connectivity expensive, unreliable or simply unavailable. Unfortunately for network engineers at large enterprises, CEOs and chief financial officers often focus more on cheap land and labor in developing countries than they do on concerns about WAN connectivity. Find out what you can do to combat the challenges of managing WAN connectivity abroad.

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By Jessica Scarpati, News Writer

Networking pros tasked with providing WAN connectivity in developing markets do have options. Instead of settling for overpriced and subpar performance, they can deploy technology that reduces their bandwidth needs or use wireless networking as an extension cord for the WAN.

As global enterprises outsource to Asia, Latin America, Africa and Eastern Europe, they may find that certain parts of those regions have plenty of broadband access. But if a company needs to set up a production facility outside of a major urban area, there could be trouble.

"If you have production facilities, they're not in Beijing or Mexico City. They're out in the field because that's where it's cheap, and the problem with 'out in the field' is that [those regions] have very bad infrastructure," said Claus Schroeder, managing director of Enterprise International, a systems integrator based in Munich, Germany. "Reliability is also an issue. Sometimes the lines have a lot of downtime, and when you work remotely, you can't work at all [if WAN connectivity drops]."

As an example, Schroeder referred to his work with Kiekert, a German manufacturer of car door locks. Distance and slow connections made it tough for users in plants in China and Mexico to collaborate with engineers in Kiekert's Heiligenhaus, Germany, headquarters.

Users in the remote locations complained it took too long to access large engineering files, but adding more bandwidth where so little exists was too expensive, he said. For companies used to doing business in broadband-rich regions of Europe and the United States, it can be a common and frustrating problem, Schroeder said.

"A lot of companies in manufacturing that have outsourced to [emerging markets] -- Mexico, China, Poland, Hungary -- outsource production and then get problems with the [WAN] connection," he said. "It's very expensive to rent a high-end line, so you outsource to save money but reinvest it in IT infrastructure."

WAN optimization, server mirroring aim to improve poor WAN connectivity

Enterprises look to WAN optimization products to get the most out of their existing bandwidth by compressing, caching and shaping data, as well as improving how the network handles applications with chatty protocols. Vendors include Riverbed Technology, Blue Coat Systems, Silver Peak and Cisco Systems.

The deployment typically requires hardware on both ends of the link -- the data center and the branch office -- and can often deliver four- to five-times faster speeds without adding bandwidth.

But WAN optimization controllers often cost tens of thousands of dollars. Most run on proprietary hardware, but some vendors -- Blue Coat, Silver Peak, Expand Networks and Certeon -- have developed virtual versions of their software to run on any standard virtualized server.

Other vendors take more of a software-centric approach to mitigate limited broadband availability -- though just for file sharing. Peer Software Inc., a data backup vendor, has been marketing its server mirroring software for the past five years as an alternative to WAN optimization controllers.

Peer's product, PeerSync, locally caches content on a standard server through headquarters and branch offices and automatically updates all copies across the WAN within a second of closing a file, according to Jimmy Tam, general manager at Peer Software.

The software locks the file while it's in use and until the update is complete, Tam said. Because PeerSync copies only changes to documents that are then accessed locally at LAN speeds, the WAN isn't so taxed with remote users downloading full copies from a data center thousands of miles away, he said.

Kiekert, the German car lock manufacturer, recently deployed PeerSync at its five locations around the globe after comparing the costs of buying more bandwidth or a WAN

optimization device, said Schroeder. An average deployment costs between $3,000 to $4,000, Tam said. Enterprises pay per site for the software license.

Peer also works with Fujifilm, which uses its server mirroring software to improve WAN connectivity between its Los Angeles data center and a branch office in Sydney, Australia, Tam said. Although Australia doesn't have limited broadband availability problems, bandwidth is sold by only two companies and was too expensive for the company to build a data center there, he said.

"The fastest access to information? It's always going to be local," Tam said.

Peer Collaboration Software

An alternative to traditional WAN Acceleration Appliances

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Increasing branch office data access performance while lowering WAN traffic

As companies expand, IT administrators are faced with the challenge to ensure that access to information is readily available and quickly delivered to every employee, regardless of whether the person works in the headquarter building or a branch office location. This challenge is increased if the data files are large, the team members are geographically separated, and WAN bandwidth is limited. To solve this problem, many companies have historically relied on WAN Optimization solutions that compress and accelerate data traffic across the WAN as employees access data centrally stored at the headquarter site. However, companies find the following weaknesses with this approach:

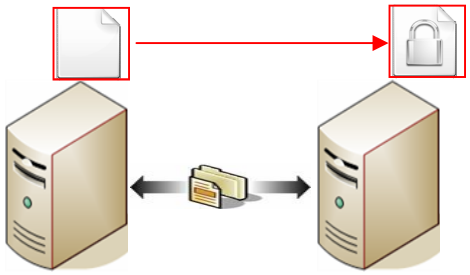
- Remote data access is still slower than desired, affecting employee productivity
- Data traffic across the WAN encompasses a large percentage of expensive WAN bandwidth
- WAN "acceleration" solutions are costly to install and maintain

The Peer Collaboration Software was created to provide a high performing and cost effective alternative to traditional WAN Optimization technologies.

Instead of forcing branch office employees to access data across the WAN from a central site and using WAN acceleration techniques to help increase the performance, the Peer Collaboration Software mirrors data to all branch sites (for fast LAN access speeds) while still maintaining centralized coordination and control of file versions.

This approach has the following benefits in comparison to WAN "acceleration" techniques:

- ***PERFORMANCE***
  File mirroring technology ensures that every team member has fast LAN access speeds to all data, providing up to **100X faster** performance versus WAN "acceleration" appliances



- ***VERSION CONTROL***
  File locking technology ensures that file version conflicts across mirrored sites are prevented

- ***EASY INSTALLATION AND MANAGEMENT***
  Software solution installs and configures within minutes. There is no additional hardware to maintain.

- ***REDUCED BANDWIDTH REQUIREMENTS***
  Decentralized file access lowers overall WAN bandwidth requirements (allowing immediate cost savings)

- ***COST EFFECTIVE***
  Customers enjoy **savings of up to 70%** versus WAN "acceleration" appliance solutions

Download a free 15 day evaluation today at:
www.peersoftware.com/collaborate

PEER™
ensure your data℠

Wireless WANs a solution to nonexistent or limited broadband availability?

Broadband infrastructure in some parts of the world is so underdeveloped that connectivity may not even reach where enterprises want to outsource. Telecom operators may not be able to trench fiber in dense urban areas that have experienced rapid growth, including parts of India and China, nor see any value in extending connectivity to rural regions.

To bridge the last mile between a remote office and broadband availability, wireless WANs are also an option.

Wireless LAN vendor Aruba Networks recently purchased Azalea Networks, a Chinese outdoor mesh WLAN vendor, for its intelligent routing, multiple radios and peer-to-peer approach to mesh, according to Mike Tennefoss, head of marketing at Aruba.

Unlike meshing traditional wireless access points (APs), Azalea's devices use Layer 3 routing to mitigate packet loss and dropped frames between hops, Tennefoss said. Four radios reduce interference, and its APs also detect the most efficient route and communicate directly with each other, as opposed to hopping back to a central controller, he added.

"In a rural environment, where the closest wide area connection or DSL connection might be in a nearby town, you would use the mesh technology [to bridge the links]," Tennefoss said. "It's not unusual to be able to go six miles, or 10 kilometers, in each hop as you're transmitting."

Enterprises with remote offices in developing countries can use point-to-point radios using microwave or 802.11 wireless technology, according to Steven Glapa, director of business development for WLAN vendor Ruckus Wireless.

For WAN connectivity, local telecom operators will usually set up the point-to-point radios to bridge the last mile between an office and its closest access to fiber, Glapa said. For local connections between two offices, enterprises can set up the Ruckus radios themselves using unlicensed spectrum in the 5 GHz range for about $1,500, he said.

Glapa contended that meshed APs can usually only cover a few hundred yards, recommending point-to-point for multiple kilometers. Although Ruckus has bridged WAN connections with its point-to-point radios as far as 25 kilometers, Glapa said most enterprises achieve 100 Mbps across one to 12 kilometers.

Wireless WANs have their limits -- be it distance, performance or line or sight problems, both vendors acknowledged. But for enterprises with limited broadband availability near remote offices in India or China, wireless can be a cost-effective means of connectivity, they said.

"If someone's looking for a 10 Gigabit pipe to their building, you're probably not going to want to do that with wireless -- ours or anybody else's," Glapa said. "The 10- to 100-gig speeds are what you do over optical fiber. Wireless doesn't really have that much of a roadmap around those, but 1 Gig is something we can see around the corner."

Resources from Peer

Peer Software File Collaboration offers high performance alternative to WAN Acceleration Appliances

PeerSync Server provides centralized administration for branch office backup

PeerSync Workstation provides continuous data protection for laptop mobile data

About Peer

Peer Software develops powerful and cost-effective file backup and collaboration software allowing enterprise customers to efficiently and reliably manage their digital assets. More than half of Fortune 100 companies entrust critical file management to Peer Software. **http://www.peersoftware.com**.

The following case study details the company use case scenario as referenced in Jessica Scarpati's SearchEnterpriseWAN.com article "Limited broadband availability abroad challenges WAN connectivity" as originally published on July 14, 2010

CASE STUDY: "Kiekert: bridging the technology gap to churn out side door locks for GM and BMW"

Situation: Kiekert is the technology leader in side door locks for automobiles, working with major brands around the world including Daimler, VW Group, Ford, General Motors, BMW, Chrysler and Renault/Nissan. With 3,500 employees across nine locations – spread out around Europe, Asia and United States – Kiekert needed the ability to share data between offices, bridging the technology gap that exists between different countries.

Challenge: Due to the globalization of Kiekert's business processes, the company needed to share information and documents across all locations quickly and efficiently. The two most important criteria: quick information access time at each branch office and maintenance of high data integrity with version conflict control. In order to address this need, Kiekert first tried Microsoft's Distributed File System but the server synchronization solution was slow and lacked the file-locking feature needed to collaborate across locations effectively.

Solution: Using Peer Software's Enterprise Collaboration solution (named FolderMaestro), Kiekert is now able to ensure that all its stakeholders across North America, Europe and Asia can work together in an efficient manner without the setbacks and missed deadlines that crop up when team projects suffer from inefficient data access processes and document version control. Users don't have to wait for a file to download across their wide area network because local copies are readily available, and there's no discernable degradation of network performance.

Peer Software's solution ensures that all file servers are mirrored in real-time so that file access is localized at each office. Integrated distributed file locking controls version conflicts across the mirrored sites.

Benefits: "We have 3,500 employees spread out across nine locations around the world, and Peer Software is helping us bridge the technology gap so that our company can operate in an efficient manner," said Karsten Wiemer, Team leader of System Engineering Information Technology at Kiekert. "If a Kiekert employee in Asia wants to edit a document with his colleagues in Mexico and Michigan, there is no problem. We can't stress enough how easy and effective the product is, especially in an environment like ours that deals primarily with Microsoft Office files."

Bridging the technology gap: The map below demonstrates the considerable geographical distance between Kiekert's nine locatons. Peer Software helps Kiekert link up their offices globally for efficient global collaboration to offset the effects of limited bandwidth across the Wide Area Network (WAN).