

# ■ **Timex Corporation**

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**Timex Uses Riverbed Technology's Steelhead Appliances to Speed its Global Network**

## Snapshot

- Timex's Wide Area Network connects 13 locations in North and South America, Asia and Europe.
- Recently moved its data center from the corporate headquarters in Middlebury, Connecticut to Singapore.
- Uses Riverbed Steelhead appliances to optimize WAN traffic and reduce load over the WAN.
- With Steelhead appliances, Timex was able to overcome 250ms latency between the Singapore data center and headquarters.
- Deployment is transparent, so users don't notice that servers are located half way around the world.
- Timex installed Plixer International Inc's Scrutinizer NetFlow Analyzer to spot and correct items such as DNS lookups and Active Directory transfers which were improperly hogging bandwidth.

Timex Corporation has been helping people keep their appointments since the 1850's. While most of its customers are fine with measuring time in hours, minutes and seconds, Dave Edgecomb is concerned with milliseconds. As the company's Manager of Global Technical Operations, he oversaw their recent data center migration from the corporate headquarters in Middlebury, Connecticut to a collocation facility in Singapore. The relocation would provide better service to the company's European and Asian offices and manufacturing facilities.

Edgecomb was concerned with how such a move would impact performance at the company's headquarters. After all, anything beyond 250 milliseconds would be noticeable to users. Edgecomb felt that WAN acceleration technologies could help solve the problem and scheduled evaluations with several WAN acceleration appliance vendors to see which could best fit Timex's needs.

"Riverbed Technology beat the other bakeoff contestants hands down in terms of ease of deployment and in overcoming latency rates of up to 250 ms," he says. "With Steelhead appliances in place, corporate users don't even notice that the data center is half way around the world rather than still sitting down in the basement."

## Making Distance Disappear

Timex started out as the Middlebury Clock Company back in the mid 1800's. Since then it has gone from windup mantle clocks to pocket watches to modern analog and digital sports wristwatches. The company's operations have gone global and it employs more than 7,500 people – greater than the entire population (6,500) of the town of Middlebury where it still maintains its headquarters. Manufacturing is done in Cebu in the Philippines, and key offices are located in Hong Kong and Zug, Switzerland. All together, the Timex WAN connects 13 locations via T-1 and dual T-1 links.

Recently the firm has been moving to a single global instance of Oracle and, as part of the strategy, decided to move its data center to Singapore. That would work out well for most of the company's locations, but not for headquarters.

"The main concern in moving the data center from Middlebury to Singapore was not allowing it to appear to end users as if we moved it," says Edgecomb.

“Corporate headquarters has much of the sensitive data, and we are used to having it readily available with quick access, so we would be the ones most affected by the move.”

Using a VPN connection produced a 274-millisecond latency, clearly observable by users. Throwing in more bandwidth did nothing to improve the situation, since it was a distance rather than capacity issue. Going with MPLS (Multiprotocol Label Switching) dropped the latency to 250ms. This 10 percent improvement in latency put Timex in the range where Riverbed made it invisible to end users.

### Technology Bake-off

Other than looking at MPLS vs. VPN, Edgecomb investigated packet formation as an alternative way to reduce latency. He scheduled a bakeoff between WAN accelerators from Cisco Systems (Wide Area Application Services or WAAS), Packeteer, Orbital LAN (since acquired by Citrix) and Riverbed.

“The main concern was network transparency – something that would go in seamlessly and the other systems wouldn’t even know it was there,” says Edgecomb. “It would look and feel the same to network administrators and no one would know it was in the network.”

He gave each vendor four hours to set up a demonstration in the test environment. Citrix did best on transparency, but was neither best nor worst on setup. After two days, Cisco’s WAAS, which is an offline system, still wasn’t up, and Timex cancelled Packeteer’s demonstration since they also utilized an offline approach. The easiest system to set up was Riverbed’s Steelhead appliance.

“You have to look at the eight pictures that show you where to plug in the color coded cables, you turn it on and then you answer the four questions on the screen,” he says. “I installed it myself for the second round of testing over lunch.”

With the field narrowed down to Riverbed and Citrix, the next step was to find a way to see the optimized traffic within the tunnel on the WAN.

“People were saying we had to do all these fancy algorithms – out of band, in band, those sorts of things – in order to get so that our network monitoring shows the true traffic that is on your network,” says Edgecomb. “We found there was a much simpler way.”

He had been using Network Instruments’ Observer software, but found it cumbersome to get the data he most needed to see. At this time he had been looking at activating NetFlow network monitoring protocol on his Cisco routers, and had downloaded a free version of Plixer International’s Scrutinizer software that collects and analyzes the NetFlow data. Since Riverbed’s Steelhead appliances also perform NetFlow exports, he pointed them to Scrutinizer as well, and discovered he could now easily see the required data.

Looking at the inputs to the Steelhead appliances allowed him to see the optimized traffic that was passing to the WAN, while the ports on the Cisco router displayed all traffic flowing over the WAN. This allowed him to see the true packet size on the network. That way, it wouldn't appear that the connection was overloaded when it was actually carrying smaller optimized packets.

“The Scrutinizer NetFlow data finally sold us on the value of Riverbed’s technology,” says Edgecomb.

### Accelerate Before Adding Bandwidth

Timex has its data center up and running in Singapore. Riverbed appliances optimize traffic at key locations to reduce latency. Singapore, since it connects to the other 12 locations, has the largest appliance – the Steelhead 3020, a 3U model that comes with 1.0TB of disk space and can support 20 Mbps outbound LAN to WAN traffic and 3500 optimized TCP connections. The corporate offices in Middlebury and Norwalk, Connecticut use the 1U 1520 models (250 GB disk space, 4 Mbps, 1000 TCP connections) and the Swiss branch office a 1U Model 1020 (250 GB, 2 Mbps, 625 connections).

“Zug is set up as a ‘branch office in a box’ with Singapore appearing to be on their LAN,” says Edgecomb. “They have local printers and local PCs, but their file servers, Exchange and other applications all reside at the data center.”

He uses Scrutinizer to monitor the Riverbed optimized network flow, and the VPN and MPLS flow on the WAN. With Scrutinizer, Edgecomb surprisingly found how much bandwidth email was consuming compared to Oracle or other applications. He also found that Active Directory transfers and DNS lookups were both top talkers on the network, so he adjusted their cache sizes to reduce the network traffic. With network mapping, he is also able to identify and remove any systems that don't belong on the network. When there is network slowness, he can instantly identify the user that is generating the excess traffic and get the process moved to off-peak times.

With the initial deployment working well, Timex is continuing to move more of its operations to the WAN. Hong Kong and Cebu will be part of the second deployment phase, and other locations will get Steelheads as needed.

“Our strategy is to continue our successful data and server consolidation actions, and then put Steelheads at the perimeter,” says Edgecomb. “If anyone has a network problem, our strategy is to put in Riverbed before adding bandwidth.”