

Data transfer has always been an issue for those operating on the front line. Tim Fish talks to **Sean Applegate**, a senior director at Riverbed, which provides Steel product solutions to meet the challenges of distances, latency and time.



Speedy delivery

Soldiers on the edge of the battlefield are using many more digital applications to support their operations, but sending and receiving data too far from HQ or a forward base using tactical communications systems can be a struggle.

'In practical terms,' explained Applegate, 'if you were back at a base and accessing your intranet applications and you needed to order some rounds for your tank, that mission transaction would take a second or two – really fast. But if you are forward-deployed, it may take ten seconds or in some cases, the bigger the transaction and the data you have to move, the longer that transaction can take.'

This becomes particularly important if soldiers are forward-deployed on operations and accessing a daily intelligence or operations brief from a peer command such as NATO or the MoD.

'They tend to be very large and high-resolution with images or video and that can eat up data on the circuit. Over a satellite circuit, they are typically very expensive and the bandwidth is small, so it is hard to stuff a lot of data down them,' he said.

'Briefs may take between five and 30 minutes to transfer back from the garrison across the satellite network, halfway across the globe and down to your tactical warfighter. I used to be one of those warfighters and do this on a regular basis. It was not unusual for a large file to take over an hour to download. So when you are trying to do information dominance, it is hard to make fast decisions if your briefs take that long to receive.'

Skip repeat

Riverbed offers Steel Connect, Steel Head and Steel Fusion, each with different capabilities that can enable faster and

more efficient data transfer. It does this by using algorithms that can identify key details within the data and avoiding repeating the transfer of the same information over and over again.

'Our solution allows you to download those briefs very fast, by removing repetitive patterns we have seen in the network before and accelerating the different protocols that transfer those. In the last several years we helped a number of commands who need to pull an intelligence brief as part of their daily operations, which looks like yesterday's but with changes. Instead of taking about five minutes they can now transfer it in five to ten seconds, as a completely new brief. For them that is extremely powerful,' said Applegate.

'On a tactical architecture, we add protocol acceleration techniques, including TCP acceleration, which is the transport protocol that the internet and most applications in the world use today. We can make the protocol faster, use more of the circuit and overcome loss – common in communications-on-the-move, in poor weather situations like rain fade or if you are driving a HMMWV, and you are going around hills or under bridges, or have buildings passing in front of the satellite dish. These all cause performance challenges that interrupt communications or impact it.'

Applegate explained: 'We are stood on the network side and instead of making something broader or spreading it out, we actually make it more efficient. Instead of sending 100 packets to move a small amount of data, we might only have to send ten. If you only send ten packets, there are fewer turns to go across the network – and keep in mind that latency was very high – and things work a lot faster.'

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The company has implemented this with US Army medical commands in Afghanistan and Iraq with immediate operational benefits. 'It allowed them to take CAT scans in a field hospital or tactical hospital and get those to the hospital the patients are being transported to. Previously, the patient would take 35 minutes to get there but the CAT scans would take an hour and a half... Now they can do it in less than five minutes. They can get scans to the doctor in the rear, and they can prep the surgery table and know what is wrong with the patient before they arrive.'

He added that there is a new market space called the software-defined WAN

'It is very cutting edge and it is disrupting the traditional router space. At the application layer, users can easily determine what communication paths they want their applications to go across. They can use those paths concurrently based on their communications needs and they can set up quality of service and security parameters easily.' ■