Communications News

Winning on aggregate

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Although bandwidth aggregation has been in use for a while, with the widespread rollout of DSL it is challenging leased lines as a cost-effective alternative for providing high bandwidth connectivity. Bryan Betts looks the options.

With broadband now available at bargain prices, whether via DSL, cable or wireless, businesses now have more alternatives than ever when it comes to low-cost yet resilient connectivity. The secret lies in how you can tie lines together to provide higher bandwidth, fault tolerance, and both inbound and outbound load balancing.

The idea of connecting to multiple ISPs, called multihoming, has been around for ages. In the past it relied on technology such as BGP, the border gateway protocol, which is how routers tell each other about link failures so that incoming packets can be re-routed onto the active link.

What's changing is that where BGP focused on leased line connectivity and required powerful routers, a range of suppliers can now aggregate bandwidth from broadband connections instead. One such is FatPipe, which can aggregate and load balance up to 20 lines, creating a single virtual pipe.

"Lots of companies have two lines, one sitting there doing nothing, and when a problem occurs it can take two or three hours to move over. I can use both lines at the same time," says Jesse Carillo, FatPipe's international franchise manager. "We allow a customer to bond lines from different companies and aggregate them through one router.

"You can do the same thing with BGP but that's relatively expensive and needs powerful routers. Our technology is dedicated, and offers that to smaller organisations. The standard FatPipe box is four WAN connections and 10Mbps ethernet, and can enable more connections and bandwidth as the customer wants."

The lines don't have to be the same type either, Carillo adds. He points out how many European organisations shadow their main connection with a different technology --- a leased line with ISDN, say --- to provide backup.

"Bandwidth is still too expensive in Europe," he says. "That's why you don't want to shadow a line --- use it instead! Yes it means you're over-committed, but most people are just happy to have failover.

"We are talking to some wireless ISPs in Ireland, they can offer satellite, wireless and cable in parts of Dublin, so now there's lots more infrastructure you'd have to knock out to kill all the connectivity. Or in the Gulf of Mexico there's an oil rig that has both a line of sight wireless link and satellite. When cruise liners dock they block the line of sight but the satellite link keeps on working."

This highlights a major issue, which is that the lines you aggregate need to be physically independent --- this is a particular problem in the UK where BT owns almost all of the final mile. If you aggregate DSL lines from suppliers who share the same line into your site you may get extra bandwidth, but if the line fails, so will all of your connections.

Another issue is inbound load balancing, although as Jesse Carillo notes, this in only important if you are hosting your own servers or sites. He says FatPipe's box handles load balancing by becoming the authoritative DNS server for the domain.

"We can do inbound and outbound load balancing, and can go up to 20 lines," he adds. "We don't need ISP co-operation, unlike BGP routing. You just have to notify them that you are now the authoritative DNS. Our SmartDNS is patented and based on BIND 8.3."

Most companies will not need to worry about inbound load balancing though. Typically they have large numbers of users browsing and downloading, rather than lots of servers, and if a line fails and is re-routed, some applications may fail but it will only affect a percentage of the users.

Bandwidth aggregation is becoming more complex too, according to Jesse Carillo. He says FatPipe recently added support for voice over IP --- the idea is to support QoS by allocating low-latency traffic to specific connections, as part of the load balancing process.

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