Solutions for Bandwidth Optimisation, Bonding and Networking

ViBE Line Bonding

ViBE Line Bonding (VLB) forms an integral part of ViBE's comprehensive suite of connectivity features. Line Bonding is often required where a specific customer or application calls for the need for greater bandwidth provision in areas where single link connectivity is not sufficient. VLB enables customers to bond up to eight links in a bonded set. These links can be of any type and any size. ViBE will deliver 95%+ of the combined bandwidth delivered.

One of the drawbacks of less advanced bonded solutions is that if one of the links in a set starts to perform badly (packet loss on one of the links for example) this will bring down the overall performance of the entire bonded set. **With VLB however this is NOT the case**. ViBE technology virtualises all the connections in a set like other technologies however VLB also dynamically polls each link to establish if any of the links are out of (user customisable) set performance criteria. Where a links (s) falls outside the acceptable range then ViBE will temporarily suspend the link from the set. The link will be re-introduced when the performance parameters are acceptable again. Whilst this will bring down the overall bandwidth offered temporarily VLB ensures the active set is performing as it should. This is especially critical when VoIP is present as VoIP is more sensitive to issues such as packet loss than other overcomes a key deficiency in other bonding products.

ViBE Multilink is further enhanced when used in conjunction with RAIN Mode + which is explained in a related product bulletin.

ViBE MULTILINK DYNAMICALLY POLLS EACH LINK IN THE SET AND IF A LINKS PERFORMANCE FALLS BELOW ACCEPTABLE TOLERANCES THEN THAT LINK WILL BE TEMPORARILY SUSPENDED ENSURING THE OVERALL SET PERFORMED TO ACCEPTABLE LEVEL.

*A link (UDP) performance test should be carried out before installing ViBE.

How does it work?

To create a VLB set ViBE enabled devices create multiple ViBE tunnels between two ViBE enabled endpoints and then use these tunnels to transmit multiplexed data encapsulated in VIBE protocol packets. To achieve this each tunnel must have a unique public IP at each end. This situation is often created by default at the CPE end of a link where multiple ADSL or other low bandwidth circuits may be used. However, often in a service provider environment the "server" end of the link may terminate on a single high bandwidth connection. In this case multiple IP addresses must be provided – one for each tunnel required, up to a maximum of eight. (ViBE allows a maximum of 8 links to be bonded.) These IP addresses are then added as alias addresses to the appropriate interface on the ViBE device.

When using fixed IP addresses at the CPE ends of a VLB link then it is possible to reference these addresses directly in the configuration file of the server endpoint so that the tunnels can be created.

Note: When using dynamic IP addresses, or possibly a combination of dynamic and fixed IP addresses, then it is not possible and so the server endpoint uses the MAC address of the CPE endpoint in its configuration file.

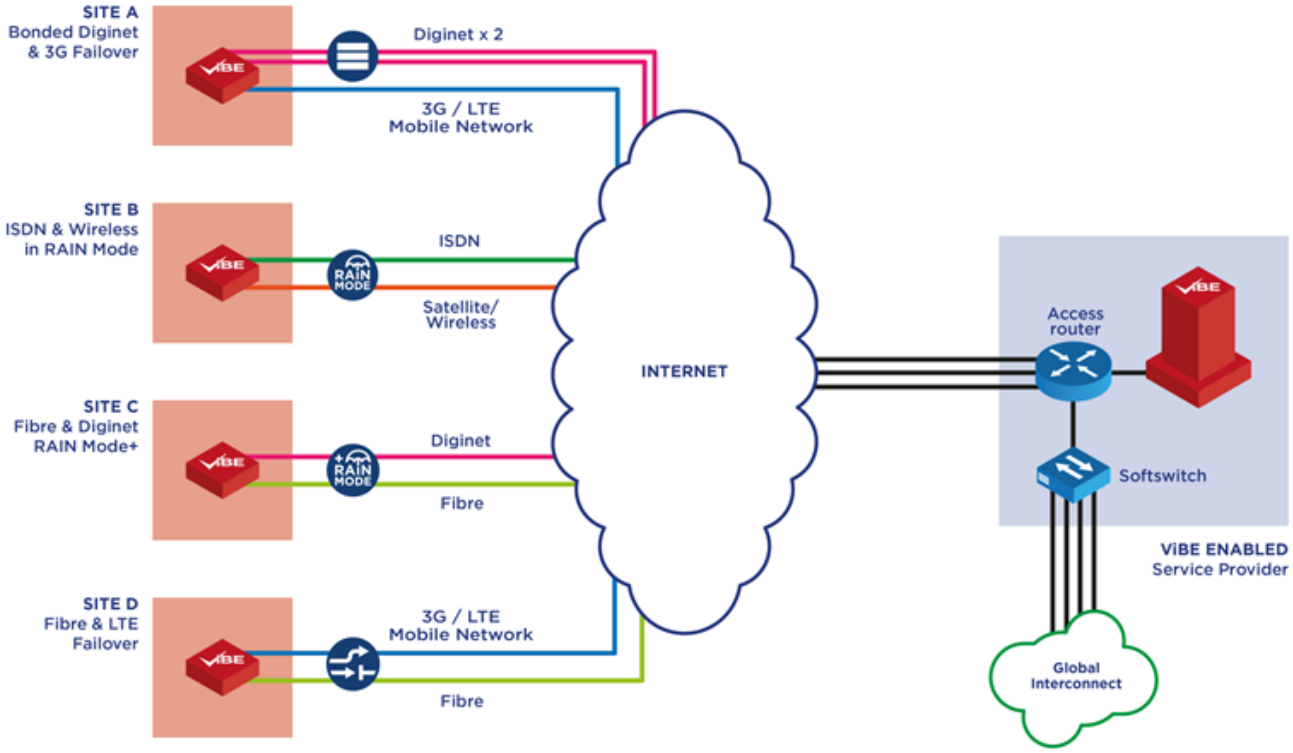
Customisable parameters governing the tolerances on each of the links in terms of suspension are managed from within the configuration interface on the central server.

CPE equipment used will govern how many links may be bonded based on number of interfaces. Multiple devices may be required to deliver up to 8 bonded links.

Compatible CPE's – RB-750, TP-Link and P2PB-203.

A key benefit of ViBE is its ability to optimise broadband connections (including ADSL) to carry a higher volume of VoIP calls (and data) simultaneously - and all at business class quality and full real-time prioritisation. The number of calls that ViBE can carry at once is dependent on the bandwidth available, but 20 concurrent calls plus other data (email, web browsing and cloud-based applications) is possible based on an upstream bandwidth as low as 256Kbits per second. Furthermore the ability of ViBE to dynamically react to changes in bandwidth performance ensures links are never over-subscribed and QoS is maintained. No other VPN is able to deliver this whilst also offering the benefits normally associated with expensive corporate networks.

ViBE Connectivity Options



- Based on VPN technology.
- Delivers up to 5 times call concurrency.
- Business grade QoS on calls.
- Essential Call Access Control measures through EsP.
- Dynamic link suspension during high pure link quality.
- RAIN mode for service improvement and failover.
- Line bonding & bandwidth aggregation.
- Offers MPLS integration and additional customer features.

ViBE is a VPN technology that delivers bandwidth enhancement, designed to optimise the performance and quality of internet and WAN connections.

ViBE delivers a comprehensive range of networking functions and is a key enabling technology for the effective delivery of voice and data services'