ADSL Network Load Sharing for SME End Users Applications

Small and Medium Enterprises (SMEs) are becoming more and more dependent on their broadband access links. This is being driven by both VoIP and the migration of data applications into the cloud. A very reliable broadband service is a must for all companies today. Business broadband services are now more cost-effective than ever before, meaning that a second ADSL service to a company site can be a practical consideration for many companies.

The Virtual Access GW7000 series dual ADSL routers support load sharing via two ADSL ports within a single CPE appliance. Dual ADSL services offer redundancy should one of the connections fail, as well as enhanced bandwidth using both ADSL circuits for assigned traffic flows.

Virtual Access' load sharing solution is designed to offer a number of benefits to the end user's Internet connectivity including maximisation of throughput and service resilience.

Being a solution which can be independent of access provider as well as ISP, load sharing can provide enhanced resilience through equipment and core network redundancy. This can be at an exchange level: termination of circuits at different DSLAM units; and at an ISP network level, through use of different ISPs for each service.

It should be noted that many ISPs operate with both BT and LLU access networks, in this situation the end user's ISP could offer a single point of service whilst providing resilience at an access network level.
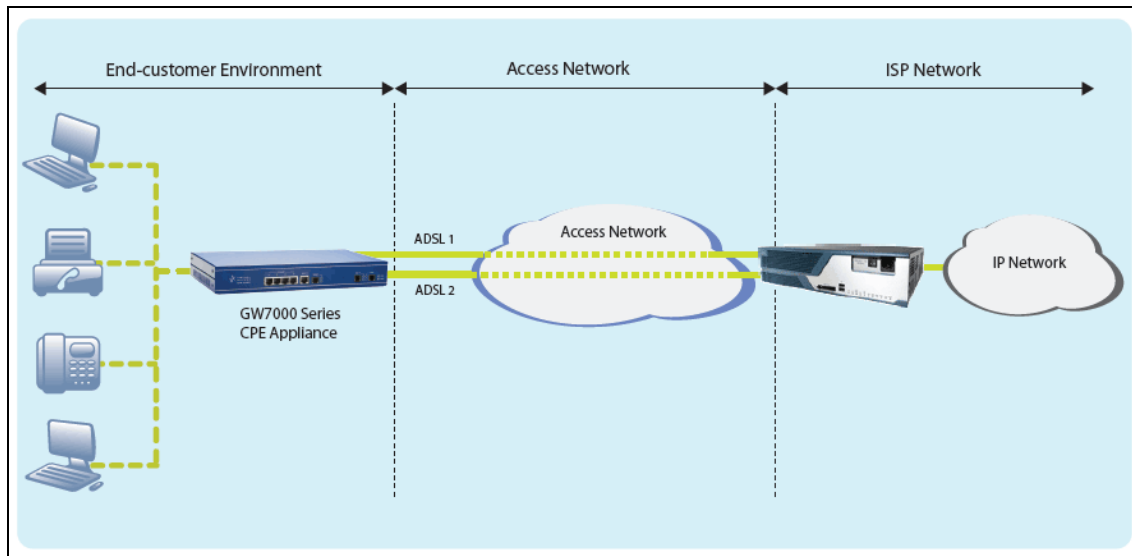
Figure 1: Load sharing architecture

How Load Sharing Works

Technologies such as VoIP and cloud computing as well as standard Internet data can quickly cause congestion in an access network. If an access network becomes congested, packet loss can occur resulting in a degradation of quality of service.

The Virtual Access GW7000 series router implements a standards-based algorithm known as ECMP (Equal Cost Multi Path routing) to facilitate load sharing. ECMP is a routing technique for forwarding packets along multiple paths of equal resource.

The Virtual Access ECMP implementation adheres to the RFC 2992 standard, which means that load sharing is performed on a per-flow basis. This method is designed to avoid packet reordering problems by ensuring all packets from any particular network flow are sent down a single deterministic path, while, in general, balancing multiple flows over multiple paths. Load sharing therefore makes use of the available bandwidth by distributing data flows across both ADSL circuits in a dual WAN configuration.

Two Different Access Networks

Load sharing across two different access networks is a very practical means for an end-user to exploit dual ADSL services for enhancement of resilience.

Key features:

• Greater throughput through use of ECMP flow management

• Improved service availability through removing a single point of network failure
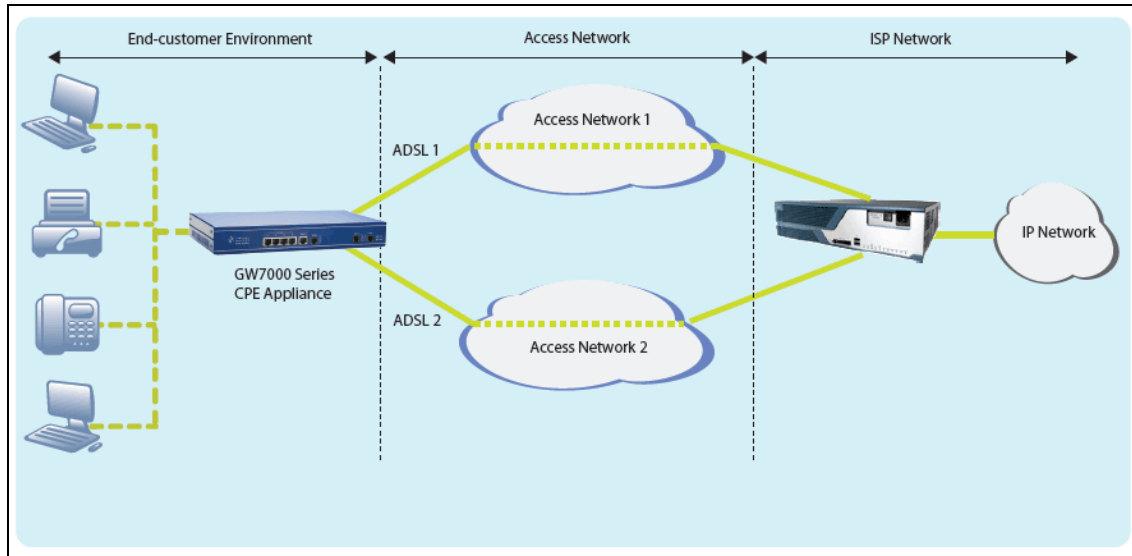
Figure 2: Load sharing architecture: Two different access network providers

A key business benefit of the GW7000 series router is versatility. It offers built-in dual ADSL connectivity in a single appliance combined with a wide selection of security, routing and quality of service functions. All facilities of these powerful appliances can be either managed locally by the end-user or centrally by the end-user's service provider.