

**The L2TP Handover Service connects end-user customers to a resellers own network through the NetServices core network. Reseller customers still have access to all the support tools provided by NetServices with other broadband services, however they have more control over the end-user customers and how the DSL tails themselves are utilised.**

Resellers utilising this service need to have their own network as well as in-house technical skills to be able to manage this service, as NetServices only manage their network elements. The Handover Service can also be used by service providers who have their own BT central infrastructures that are close to full capacity. NetServices effectively manage its infrastructure to ensure that there is always free capacity available, maintaining the standard of service that end-user customers receive.

### Value Added Services

The increased control afforded by the L2TP Handover Service enables reseller customers to build their own services based on the underlying DSL technology.

End user customers purchase contended or non-contended services and with the greater control the service afforded, resellers can deliver wide area networking, content delivery and other value added networking services as well as simple broadband connectivity.

NetServices provides comprehensive diagnostic tools to ensure resellers can more effectively manage their customers.



### Flexible Control

The L2TP Handover Service provides resellers with far more control over use of the DSL tails than the fully managed service. Ideal for those with in-house technical knowledge the service can also be used by service providers who want to set up as a wholesale ISP with far less infrastructure costs than provisioning directly with BT, and with the ability to provision directly with the BT Eco System.

### Managed Expansion

Bandwidth can be purchased in manageable incremental portions which can suit low as well as high volume numbers. It also allows the reseller customer to gradually increase bandwidth as demand increases.

*“Excell are a rapidly growing business, focussed on delivering converged solutions to our customers”.*

Mark Murphy, Excell Group.

## What you get with the L2TP Handover Service?

With the NetServices L2TP Handover Service resellers subscribe to a contracted aggregate bandwidth, charged at fixed monthly charge. Resellers can burst above their subscribed bandwidth where they will be charged a tiered per Mb/s excess rate.

All RADIUS interaction occurs directly between BT and the resellers, with responsibility for the authentication and IP address assignment lying with the reseller customer. Dedicated reseller realms are available as a chargeable option and are dependent on volumes of end-user customers and the nature of the reseller's requirements. In order to protect both NetServices and the reseller from performance issues arising from excessive fragmentation issues NetServices operate a "no routine fragmentation" policy.

Due to the level of technical complexity involved for a reseller to set-up and manage an L2TP Handover Service, NetServices offer comprehensive consultation and pre-sales advise on RADIUS configuration, IP Addressing, routing and Home Gateway configuration.

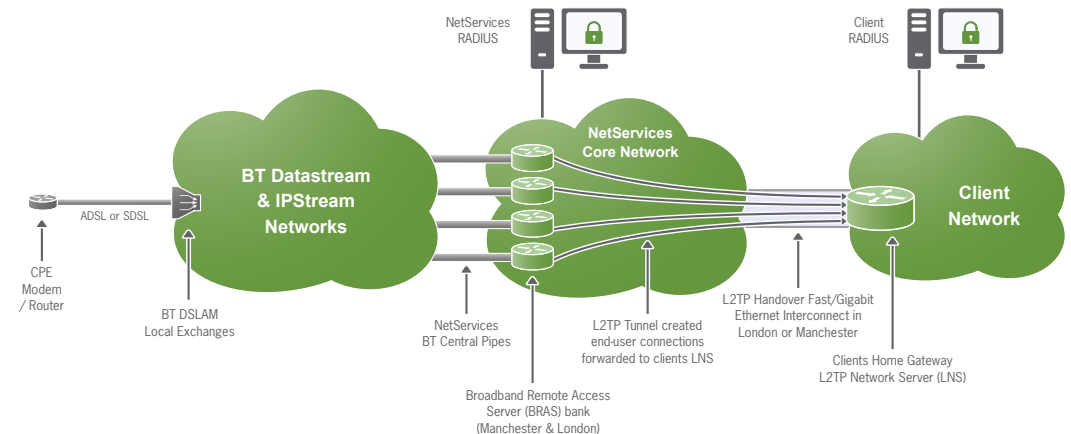
The service can be branded within the Client Control Panel (CCP) to reflect the resellers own corporate identity allowing the reseller to operate with NetServices appearing invisible to the end user customer. A branded customised customer shopping cart can be created facilitating the whole of the on-line shopping process. Resellers can even operate without their own online payment gateway as all payments can be collected from credit card by NetServices.

It is important that resellers forecast their aggregate bandwidth utilisation effectively and shape traffic leaving their network. NetServices strongly recommend that if ADSL Max services are being delivered to end-user customers then they subscribe to at least 10Mb/s. A single end-user customer could use up to 8Mb/s of network bandwidth when downloading a file leaving the reseller exposed to the cost of the 'burst' bandwidth.

## From a central point (WAN solution)

The service requires that the reseller has the following building blocks in place:

- Public or Private Interconnect, usually Ethernet, with NetServices.
- Home Gateway (L2TP Network Server) usually a Cisco router or LINUX server with L2TP software.
- Authentication Server (usually RADIUS).
- Own IP Transit Connectivity (if providing internet services).

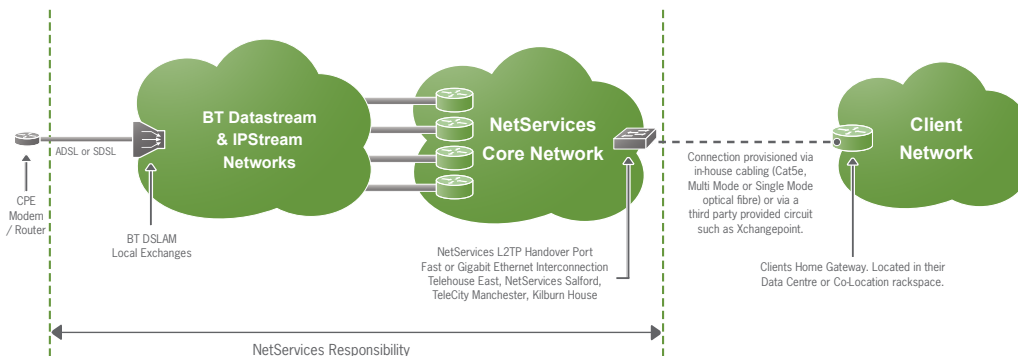


## Additional and Optional Services

There are a number of standard options for connecting into NetServices for the L2TP Handover service. Generally connectivity is provisioned using Ethernet connectivity via structured CAT5e or Multi-Mode Fibre Optical cabling. NetServices require that the cabling with the appropriate terminating connector is attached (RJ45 or SFP LC connectors, respectively) and is left coiled under our rack labelled clearly with the client name.

Direct connections are currently available in London Telehouse and Manchester TeleCity. NetServices can provide connections to all other locations by provisioning Ethernet or Leased line connectivity into the other major London data centres such as Redbus, Global Switch and TeleCity II and to client locations if required.

Below is a schematic that depicts a typical L2TP handover



## Broadband Enhanced Care

Broadband Enhanced Care from BT is an option which resellers can provide to ADSL or SDSL subscribers. Enhanced Care provides extended hours of support to 24x7. For maximum protection, the underlying PSTN circuit should also be covered by BT's Total Care service offering.

## Service Provider Capacity

### Resilient/Overflow Capacity Option

The L2TP Handover Service can also be used by service providers who have their own BT Central infrastructures that are close to full capacity which will lead to performance issues for end user customers. Limited Service Selection enables these resellers to direct their end user customer circuits directly via the BT Eco system, through the NetServices infrastructure to their network via an L2TP handover.

This can also be used as a backup option should a service provider's own central pipe infrastructure fail. During such circumstances the end-user customers connect via the L2TP handover.

### Migration from BT Central Infrastructure

Service Providers may also choose to migrate to NetServices by ceasing their own BT Central services. This provides an ideal solution for providers requiring additional capacity without having to commit to the fixed level increases available from BT. Many providers find the increase from 34 to 155Mb/s too steep an increase for their business and cost prohibitive in proportion to the volume of end user customers.

## End User Connectivity

Both contended and non-contended ADSL and SDSL broadband internet connectivity can then be provisioned for end-user customers with capped and unlimited variants available depending upon which circuit type and service the reseller customer has subscribed to. Bonded and non-contended ADSL Max circuits are also available, these utilise both DataStream and ADSL Max technologies, to deliver higher speed access circuits with significantly increased upstream speed.

## Service Delivery and Support

Underpinning our Broadband Services is a commitment to invest in the appropriate network infrastructure so that you can provide a flexible range of fast and reliable services. Using two of BT's wholesale offerings – DataStream & IPStream, NetServices offer ADSL speeds ranging from 256 Kb/s to 8 Mb/s DSL MAX, across a range of contended, non-contended and bonded services.

## Client Control Panel

The Client Control Panel underpins our service to our reseller customers and is a fundamental element of all our Broadband Services.

## Instant 'Shop' Front

All services can be branded within the CCP to reflect the resellers own corporate identity so NetServices are effectively invisible to the end user customer. A customised customer shopping cart can be created facilitating the whole of the on-line shopping process. Resellers can even operate without their own online payment gateway as all payments can be collected from credit card by NetServices.

## Order Processing

The CCP has integrated check functionality so all orders can be processed either directly by customers or by resellers. Circuits can be provisioned, regraded or migrated on the system; it also facilitates ISDN conversion orders and provisioning of Enhanced Care products.

## Bulk Upload

The CCP offers a fast and efficient means of processing multiple orders and provides near instant response to requests.

## Tracking

Reporting options allow the reseller to track where orders are; in effect providing resellers with a snapshot of where their orders are in the BT order system (Eco). Reseller customers can search by individual postcodes, addresses or simply 'all orders' to generate their required reports.

## Support

Resellers can perform diagnostic testing so they are able to check the end user line; speeding up issue identification and assisting in identifying the nature of any faults. If there is no fault on the line then customers can be informed there and then. Should a fault be identified a ticket is automatically generated.

## Bandwidth Accounting

Reseller customers choosing a capacity based service can search on aggregated user transfer so they can manage their 'pipe' usage and monitor the likelihood and level of 'burst' for the current accounting period. This also allows resellers to profile the overall trend of usage, e.g. generate traffic patterns by day and time. This enables targeting of customers likely to use bandwidth at less busy times so you can generate more profit from your existing infrastructure.