

DSL Technical Data Sheet

DSL provides a cost effective and appropriate access technology to many wide area networks. ADSL is available across the UK at all broadband enabled exchanges with SDSL being available at a more restricted number of exchanges.

Standard ADSL access circuits are available with an upload speed of 256kb/s and download speeds of 256kb/s, 512kb/s, 1Mb/s or 2Mb/s to the remote sites. Services are available at 1:1 and office contention.¹

ADSL Max is available as a contended and non-contended service that provides up to 8Mb/s download speeds and up to 800kb/s upload speeds. This is available at all BT serving ADSL exchanges. The non-contended variant of this is particularly suitable when its used to deliver 1Mb/s or 2Mb/s downstream and up to 800kb/s upstream, effectively providing a hybrid service of ADSL and SDSL.

ADSL circuits require that an operational PSTN line has been installed and is owned by the customer, and that the local BT exchange has been upgraded to provide ADSL services. NetServices can offer a combined service where both the PSTN and ADSL circuits are supplied.

SDSL access circuits are available at symmetrical speeds of 512kb/s, 1Mb/s or 2Mb/s to the remote sites, with 1:1 or office contention ratios.

1. Contended ADSL services were originally as providing up to approximately 50:1 and 20:1 contended IP over an ADSL connection respectively. These levels are now defined as Office and Home products where Office products have priority over Home products through the shared part of the BT IPStream network.

Therefore, under periods of network congestion, Office products will receive a higher downstream throughput than their Home equivalent.

2. ADSL Max uses rate adaptation and advanced line management tools to find the best service that a line can support. It will allow the end-user customer to achieve the highest stable line rate that their line can RELIABLY support from 288 kb/s up to 8,128 kb/s in the downstream direction and up to 812kb/s in the upstream direction

3. Within a managed service the BT dual standard RJ11/45 is available. A Wires Only solution requires a standard BT phone socket.

Service Elements

Standard ADSL

Downstream Bandwidth	2Mb/s, 1Mb/s, 512kb/s & 256kb/s
Upstream Bandwidth	256kb/s
Contention ¹	Office Product, Non-Contended (1:1)

ADSL Max²

Downstream Bandwidth	8 Mb/s - Contended 8Mb/s, 7Mb/s, 6Mb/s, 5Mb/s, 4Mb/s, 3Mb/s, 2Mb/s, 1Mb/s, 512kb/s - Non-Contended
Upstream Bandwidth	800kb/s
Contention ¹	Office Product, Non-Contended (1:1)

SDSL

Bandwidth	2Mb/s, 1Mb/s, 512kb/s
Contention ¹	Office Product, Non-Contended (1:1)

Bonded ADSL

Bandwidth	Combinations of either SDSL or ADSL Max Circuits up to 8Mb/s downstream
Contention ¹	Non-Contended (1:1)

All DSL Services

Presentation (ADSL)	BT dual standard RJ11/RJ45 ³
Local Access	BT Local Loop (SDSL), PSTN Number associated with line for ADSL
Topology	Hub & Spoke
Backup Options	ADSL & ISDN2e
Support	Core Hours or Extended Hours

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Bonded Services

Bonded non-contended DSL circuits can be used in locations where the achievable DSL line rates are low or simply where a greater bandwidth is required.

The sum of the bandwidth supplied by a number of non-contended end-user access circuits is aggregated together utilising Multi-Link Point-to-Point Protocol (MLPPP). Numerous combinations of bonded circuits are available, providing that the bandwidth is evenly shared across a maximum of 6 access circuits of the same technology.

The availability of DSL access circuits is subject to end user locations complying with distance limitations associated with DSL technologies.

QoS DSL Services

NetServices delivers QoS over DSL access technologies via both the DataStream and IPStream networks. This capability has been designed to provide a low cost access technology suitable for deployment to locations where data prioritisation is required, but where the use of traditional leased line and Ethernet circuits are cost prohibitive.

QoS over DSL has a considerably shorter term of contract, minimal installation fee and faster lead times than either traditional leased line and Ethernet technologies.

Example Service Types

Service Type ⁴	Downstream Bandwidth	Upstream Bandwidth	Class of Service		
			Platinum IP Precedence 5	Gold Platinum IP Precedence 3	Bronze IP Precedence 1
Converged - Option 1	800Kb/s	800Kb/s*	50Kb/s	300Kb/s	450Kb/s
Converged - Option 6	800Kb/s	800Kb/s*	300Kb/s	300Kb/s	100Kb/s
Data Only - Option 1	2Mb/s	800Kb/s*	NA	500Kb/s	1.5Mb/s
Data Only - Option 4	2Mb/s	800Kb/s*	NA	2Mb/s	0Kb/s

Full details of service types are available in the service descriptions.

QoS DSL – IPStream

The NetServices QoS DSL - IPStream offering provides downstream QoS over contended DSL circuits. NetServices utilise the Cisco feature “per session shaping and queuing over L2TP” providing a best effort QoS capability through the BT IPStream network.

QoS DSL - IPStream is available with a fixed bandwidth and a finite number of service policy options in both converged and data-only formats and offers 3 Classes of Service. The downstream bandwidth of the converged offering is limited to 800kb/s, and the data offering 2Mb/s. Both services use ADSL MAX tails.

The difference in size between these offerings reflects the best efforts nature of the BT IPStream network, and the tolerance of non-real time data traffic in comparison to real-time traffic.

QoS DSL DataStream

Circuits are delivered via the BT DataStream broadband network which is non-contended. The introduction of real time enabled DSL Access Multiplexers (DSLAMs) has meant that traffic prioritisation is available at the DSLAM. In effect the DSLAM provides a virtual leased line through the ATM cloud on which DataStream is based.

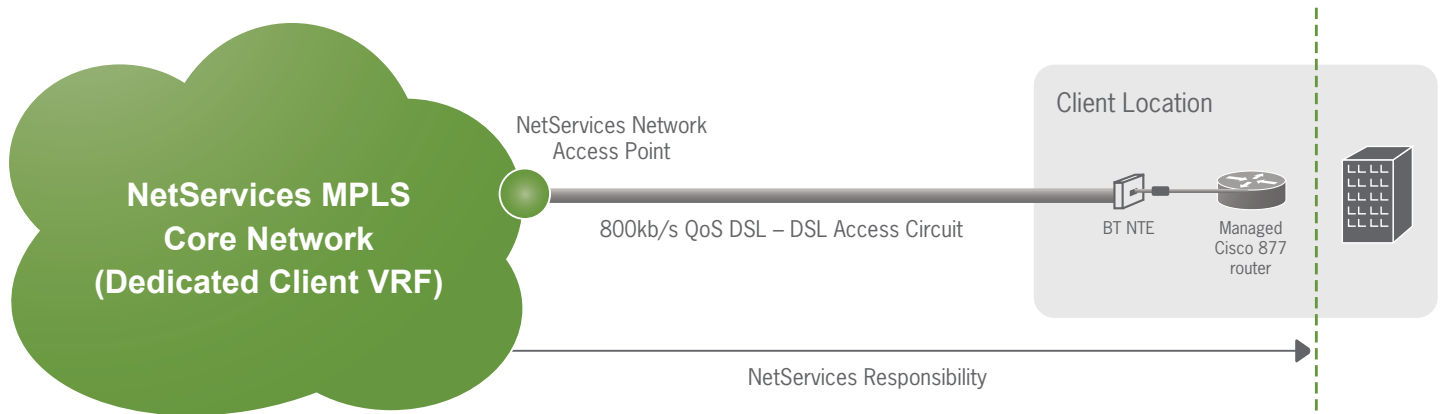
Quality of Service (QoS) can be applied over the NetServices DataStream network topology where services with a 1:1 end-user Constant Bit Rate (CBR) virtual path mapping are available. The proportion of bandwidth assigned to a QoS policy is dependent on the individual access circuit speed. The achievable speeds and circuit combinations are the same as for standard non-contended DSL access circuit technologies and bonded services are also possible.

The QoS DSL - DataStream service is available, without restriction, as per the full NetServices Converged MPLS VPN solution offering and configurable QoS options.

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DSL in Managed Services

A managed Cisco router is provided at all remote Customer sites. This will typically be a Cisco 800 series or greater model router. The customer will be presented with an RJ45 Copper Ethernet Interface. This interface is the point of demarcation between NetServices and the Customer's LAN.



DSL in Wires Only Services

With a wires only service, partners or their customers, manage their own security layer. In this instance the point of demarcation is the BT NTE interface. NetServices require the customer to provide a method of monitoring the circuit between our network and the customer premises. This needs to be a loopback interface using a NetServices designated IP address specifically configured for monitoring purposes. The point of demarcation for this service is illustrated in the diagram below.

