

BTnet UK Internet Access

21CN Customer Service Description



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1 Introduction

BTnet is the market leading internet service, providing uncontended Internet access services via the leading edge 21CN network across the UK, with port speeds and bearer bandwidths ranging from 2Mbit/s to 500Mbit/s and 1Gig available in a growing number of areas.

BTnet is progressively providing Internet access circuits in order to support increasing employee, customer and client expectations of the on-line experience you provide them.

If you provide a source of on-line content & applications, or have a requirement to obtain higher levels of throughput, service availability and guarantees, you may benefit from the advantages offered by BTnet circuits, over contended broadband delivered services.

Business to Business (B2B) & Business to Customer (B2C) are the primary function of the Internet in the UK, with Intranet traffic being carried over VPNs. However, there is growing evidence that with the high throughput and availability of Internet services, they are increasingly being used as an alternative business platform, suitable for most applications.

BTnet is delivered using a high speed, highly resilient, core IP platform, which is used to support a range of data services, and is accessible through over 700 access nodes across the UK.

BTnet uses the core IP platform, which is connected to multiple UK ISP peers and, via BT's European Internet backbone, to ISPs & customers around the world. These highly resilient connections are carrying tens of Gigabits of traffic every second.

The BTnet network will continue to be developed to offer the best of breed national and international connectivity that will support you in your quest for business class Internet.

2 Service Overview

BTnet is available with flexible bandwidth options from 2Mbit/s to 500Mbit/s and 1Gig available in a growing number of areas. Once your service is up and running, you will be able to increase or decrease your port speed within the bounds of your bearer capacity (see Section 6.2.2).

Key BTnet Service features are:

- Ethernet fibre delivered services with Total Care (24x7x365).
- Ethernet in the First Mile (EFM) technology delivered services, for port speeds of 2Mbit/s to 10Mbit/s, with Enhanced Care (4 Hour response / 20 Hour fix).
- 2Mbit/s to 500bit/s of uncontended port speeds available in flexible increments.
- Flex up* capability, giving you the flexibility to vary your port Speed within your bearer capacity.
- A range of bearer speeds are available to deliver the required port speed in the following steps 2Mbit/s to 10Mbit/s EFM and 10Mbits/s, 100Mbit/s 500Mbits/s fibre.
- Symmetric or asymmetric bandwidth options: The asymmetric option is available on 10Mbit/s or greater accesses only, with greater outbound (your site to Internet) than inbound bandwidth.
- 1, 3 & 5 year term fixed price contract options with the standard connection fee waived for 3 & 5 year terms.
- A Service Level Agreement, supported with financial compensation if we do not meet stated targets in delivery, availability and latency.
- Disaster Recovery options are available.
- Bandwidth utilization reports are available on request, via an on-line reporting application.
- Static routed IP addresses (No charge for provision at time of circuit installation).
- Domain name registration and administration (Additional charges may apply).
- DNS (Primary and Secondary name servers).
- News services (Additional charges may apply).
- Mail services including store and forward (Additional charges may apply)

* Currently, the Flexing modification can only be performed during standard working hours: Monday to Friday (excluding bank holidays) between 0800 and 1600. As EFM services are provided with equal bearer and portspeeds, there is no Flex service available.

3 Suitability

BTnet Internet access services are designed for use by ISPs, OLOs, Corporate, Government and Business customers in the UK. If you require full flexibility from your Internet access service, with scalability of bandwidth to support all of your future business requirements, backed by competitive SLA's, supported by a range of resilience options, then you should choose BTnet.

4 Service Options

BTnet is delivered over a range of bearers and allows you to specify the port speed required within the capacity of each bearer.

BTnet services are delivered with a bearer Network Terminating Equipment (NTE) and a Service Management Customer's Premises Equipment (CPE). The Service Management CPE allows BT to manage the service at the IP layer and presents the Internet connection via an Ethernet interface. You can request that the service is delivered as "wires only" i.e. without a Service Management CPE, although this reduces the ability for BT to manage the service and detect any faults that may occur.

The service may be provided with symmetric or asymmetric bandwidth (if the inbound port speed is 10Mbit/s or greater). Symmetric bandwidth is the standard configuration for your modern business platform and satisfies the requirements of time critical applications such as voice communications, conferencing and collaboration. With asymmetric configuration the outbound bandwidth (from your site to the Internet) is greater than the inbound bandwidth. This asymmetric service is ideal if you are a content or application provider, sending more data to the Internet than you receive, and offers cost benefits accordingly. Both configurations have uncontended bandwidth as standard.

BTnet allows you to flex your port speed within your bearer capacity, with a target lead-time of only 2 days from the time the request is accepted by BT¹. There is no limit to the number of flex ups (increase's in port speed) you can have, however you must keep the flexed port speed for a minimum of 5 days before flexing again*. If your flexed port speed request exceeds the capacity of your existing bearer, then a bearer of greater capacity would be required, with an installation charge and lead time the same as that of a new provision. This is particularly applicable to EFM services which are provided with equal bearer and portspeeds, making the Flex service unavailable.

Currently, the Flexing modification can only be performed during standard working hours, Monday to Friday (excluding bank holidays) between 0800 and 1600, and flexing down requires a separate email request.

To flex your port speed, please contact your BT Account Manager.

* A daily rate charge is used if the flexed port speed is taken for limited time only.

4.1 Availability

BTnet offers an SLA with compensation when targets are not met against leadtimes, latency and availability.

Latency will be determined by BT calculating the average of round-trip transmission measurements taken in ten minute intervals during a calendar month. The results will be posted via the BTnet external website (www.bt.net).

¹ For large bandwidth requests BTnet team will check and confirm lead time for the flex to take place.

The Latency Guarantee applicable to the UK Core Network Connection and to the Transatlantic Network Connection are as set out below;

The UK Core Network Connection:

The Latency Guarantee is an average round-trip transmission time of 20 milliseconds or less between BT selected core PoP in the BT Network.

The Transatlantic Network Connection:

The Latency Guarantee is an average round-trip transmission time of 95 milliseconds or less between designated transit routers at each end of the transatlantic link.

If BT, based on its data, fails to meet the Latency Guarantee BT will apply a reduction to your rental charge for the service as follows:

- a) If failure to meet the Latency Guarantee occurs in two consecutive calendar months, BT will apply a reduction equivalent to one day's rental charge for that service.
- b) If failure to meet the Latency Guarantee occurs for longer than two consecutive calendar months, for each additional month will BT apply a reduction equivalent to one day's rental charge for that service.

BTnet availability SLA targets:

Access Speed	SLA %
2 - 10Mbit/s EFM	99.950
10 & 100Mbit/s Ethernet	100.00
500Mbit/s Ethernet	100.00

4.1.1 Service Availability Compensation

If there is an outage, based on BT's data, and you report the outage and claim for a reduction to the rental charge, BT will apply a reduction to the your rental charge for the service as follows:

- a) Where the outage Period is less than or equal to ten (10) hours, BT will apply a reduction equivalent to one (1) day's rental charge per hour of downtime for that service. For the purpose of calculating the outage Period, a fraction of one (1) hour will be rounded-up to the nearest hour.
- b) The maximum reduction applied per quarter will be capped at ten (10) hours of outage, which is equivalent to ten (10) days rental charge for that service.

Further details on the SLA are available from your BT Account Manager.

4.1.2 Service Availability Compensation Conditions

You should report an outage within two days of experiencing the outage by telephone to BTnet IP Service Centre on 0800 699879 (option 2). BT will provide you with a relevant fault reference number.

Once BT verifies the outage, claims must be made no later than by the 28th day of the next calendar month, quoting the relevant fault reference number by Email to: directslg@bt.net

For EFM services the compensation period starts after the first five hours of reported downtime.

4.2 Future Resilience Options

In the future BTnet will be introducing two levels of resilience. Both of these will use a second bearer, with the following configurations available:

4.2.1 Failover

Utilising a redundant clone of your main access bearer, with diverse routing where available, Failover provides a continuation of service in the event of main access failure, with all traffic routed over the activated second circuit.

4.2.2 Loadbalancing

By providing a second active access bearer, with diverse routing where available, Loadbalancing ensures continuity of service in the event of access failure on either bearer, while providing up to double the bandwidth requirement during normal service.

4.3 IP Addresses

You will require public registered IP addresses to enable the routing of data traffic to specific devices and locations via your BTnet service. IP addresses can be issued to you by BT, with no additional charge at the time of ordering your internet service, or, if you have them, your own Provider independent (PI) addresses can be used. BT will use RIPE guidelines to ensure you are allocated enough IP addresses for your needs. It is important to include your IP needs as part of your service considerations, as the RIPE guidelines require you to justify the address space requested.

BTnet can only route IP addresses provided by BT or your own PI addresses. IP Addresses stay with the ISP who issued them, so if you are moving from another ISP, you will need to hand back your IP addresses and take new ones from BT. Similarly, IP addresses issued by BT, unless they are PI addresses, would not be transferable to another ISP service. If your own PI addresses have been previously routed by another ISP, you will need to ensure their network stops advertising your addresses when you move to BTnet.

RIPE (<http://www.ripe.net/>) control the issuing of public IP addresses and mostly issue via ISPs who allocate to their customers from their Provider Allocated (PA) address space. But, under certain circumstances, RIPE issue addresses from their Provider Independent (PI) address space directly to customers. To enable better control of PI Resources (PIR), RIPE has put in

place mechanisms which requires BT, as your internet service provider, to include the following conditions in our contracts if you take PI Resources:-

- None of the PIR may be sub-assigned to a third party
- Registration fees must be paid by the Customer to BT for the PIR
- The PIR will return by default to the RIPE Network Coordinating Centre if the customer cannot be contacted and/or any registration fees are not paid to BT
- The use of PIR is subject to RIPE policies as published on the RIPE web site and which may be amended from time to time.

4.4 Multi-homing using BGP4

BTnet supports your use of BGP4 to set up multi-homing to a second service provider if required. If you wish to take service from BTnet and another ISP connected to the same equipment, you will need to use Border Gateway Protocol Number 4 (BGP4) on your router. To do this, you will need to apply to RIPE for an Autonomous System number (AS number). The AS number identifies you as a unique network, independent of any ISP's network, and allows two or more ISPs to route internet traffic to and from you. Your BT Account Manager will assist you in securing an AS number.

In order to use BGP4, you will need to use your own RIPE registered IP addresses (Provider Independent or PI) rather than the BTnet or other ISP's issued addresses. Addresses issued by an ISP (Provider allocated) will form part of your PA address space and will not be routable via BGP4. BTnet will support your BGP4 activities, although Failover, Loadbalancing and multi homing will be mutually exclusive services. These can not in any way be combined to allow you to run BGP4 over the Failover or Loadbalancing BTnet services, when they become available.

4.5 Disaster Recovery

4.5.1 Disaster Recovery Overview

By applying a Disaster Recovery solution to your BTnet service, you will benefit from the ability to quickly reconfigure your IP services from one site to another in the event of a disaster. You will have to quote a security password, which requires validation before a pre-agreed plan will be evoked. If you require the additional security of BTnet Disaster Recovery, you will have a customised Disaster Recovery Plan tailored to meet your needs.

BT will aim to implement the changes within two hours of your Disaster Recovery activation request. This service will be available 24 hours a day. If, after the plan has been activated, it seems that the re-routing of traffic will be long term, it may be recommended that the re-routing be made permanent.

4.5.2 Disaster Recovery Delivery

If you require a Disaster Recovery plan, you must complete a Customer Requirement Form (CRF) and provide a diagram detailing your requirements. The completed CRF and diagrams will then be passed to the BTnet design team, who will draw up the plan in consultation with you.

To invoke the plan you must contact BTnet support and give the appropriate security details, these will be agreed between you and BTnet per plan.

To cancel activation of the plan you must contact BTnet support and, using the cancel password for the plan, instruct them to restore the traffic to normal routing. In both cases the target is 2 hours and BTnet support will advise you of completion and assist with any verification required.

For activation Tel: 0800 699879 (Option 2)

Any changes to your network that may affect the service in regard to the disaster recovery plan (such as re-allocation of IP addresses) must be advised to BTnet so that a revision can be made to the plan. It is your responsibility to advise BTnet if changes have been made that will affect the plan.

BTnet Disaster Recovery services are not included in any Service Level Agreement

4.6 Application services

4.6.1 Domain Name Service

Domain Names Service (DNS) is a distributed hierarchical system for resolving host names to IP addresses. If you are connected to the BTnet network and have registered a domain name, you must have multiple name servers for the domain: a primary server and at least one secondary server for back up purposes.

4.6.1.1 Primary Domain Name Service (DNS)

The primary domain name server has the authority for the whole domain. Each domain must have a primary and at least one secondary name server.

- Up to 10 primary DNS names are included and hosted free of charge. Additional names can be added as a chargeable option.
- BTnet will register DNS on your behalf.
- Primary DNS is available for any domain that you own.
- If you are moving to BTnet from another supplier you must inform the local registration authority of the change to your existing Primary DNS or have your current supplier do that for you. The registration authority will only accept changes from you or the existing supplier.
- Domain names are subject to separate terms and conditions set by the appropriate registry.

4.6.1.2 Secondary Domain Name Service (DNS)

BTnet provides a secondary domain name service for name and address resolution. This is reliant upon you having already obtained a primary BTnet DNS, which will transfer details to the BTnet secondary DNS. Guidelines for this service are as follows:

- Secondary DNS for up to 250 domains per customer are included as standard. More domains can be included as a chargeable option if required.
- Changes to the DNS Primary server that may affect zone transfers must be notified to BT through the BTnet DNS team by email: dns.registration@bt.com

4.6.1.3 DNS Registration Charging

BTnet provides a registration service for your domain names. We will register your requested domain name with the appropriate registration authority, subject to the availability of the requested name. BT will apply a charge for this service.

4.7 DNS Support

BT will provide support for DNS changes in standard working hours. Changes made out of hours will incur a charge. Requests for support must go through your BT Account Manager. DNS activities are not covered by any Service Level Agreements.

4.7.1 Mail

Email, along with most network applications, is based on client/server architecture. BTnet's email system is based on the Simple Mail Transfer Protocol (SMTP). SMTP allows the transmission of messages from one server to another. The objective of SMTP is to transfer mail reliably and efficiently.

BTnet has multiple mail servers and offers (if you have your own mail server) a store and forward mail service. This can be used when your mail server does not wish to establish SMTP sessions with remote mail servers on the Internet.

If you are managing your own mail servers, you must ensure that it is NOT configured to allow open mail relay. Failure to enforce this could lead to BTnet blocking all of your mail as open relays are used for SPAM.

If you require the use of email, but do not wish to run your own mail server, then dedicated mail boxes can be set up on the BTnet POP3 Mail Server. This is a chargeable option. For each mailbox you will receive a username and password. In order to communicate with the BTnet POP3 Mail Server, each end user requires a personal mail client.

4.7.2 USENET News Feeds

Usenet News is a network based information service providing a variety of on-line information and discussion groups. BTnet offers access to USENET News feeds via your news server as a non-chargeable option. If you prefer not to manage your own news server, BTnet News will cover all aspects of the service as a chargeable option.

4.7.2.1 BTnet Newsfeed Service

BTnet offers an optional newsfeed service using the Network News Transfer Protocol (NNTP). NNTP enables the efficient transfer of articles between news servers, and between a news server and its news clients.

You must operate a news server to host the data BTnet provides and must specify to where the Newsfeed will be directed. The BTnet Gateway sub product will not provide Newsfeed to customers of customer's i.e. an ISP's customers. Two types of Newsfeed are provided, Push Newsfeed and Pull Newsfeed.

Push Newsfeed is a very fast method of pushing newsgroups from our news servers to you. The newsgroups to be pushed are predefined using a specific web page. Pull Newsfeed, which actually uses NNTP, is intended for organisations whose bandwidth is much smaller, but still requires you to manage your own news server. In this way you are able to pull only the articles you wish to see.

BTnet optional Newsfeed service excludes a number of news groups, for example, those that are generally accepted to be illegal or distasteful.

4.7.2.2 BTnet Newsread Service

The Newsread service will allow you to read and post directly off of the BTnet news server 'news-reader.bt.net' even if you do not have a News server. Newsread is a chargeable option.

5 Customer Premises Equipment (CPE)

CPE is provided as standard, as part of the BTnet service. The BTnet CPE provides isolation between the network and any of your own equipment, allowing BT to provide full management of the Internet Access service.

BT is solely responsible for the configuration and maintenance of the service management CPE provided with BTnet.

Limited SNMP read only access to the Service Management CPE, to view utilization and alarm statistics, is available as a chargeable option if your service meets the following criteria:

- Have 1 or more circuits totaling 10Mbit/s of bandwidth or above.
- Suitable network management systems in place.

Full details of the CPE provided are available in Annex 3

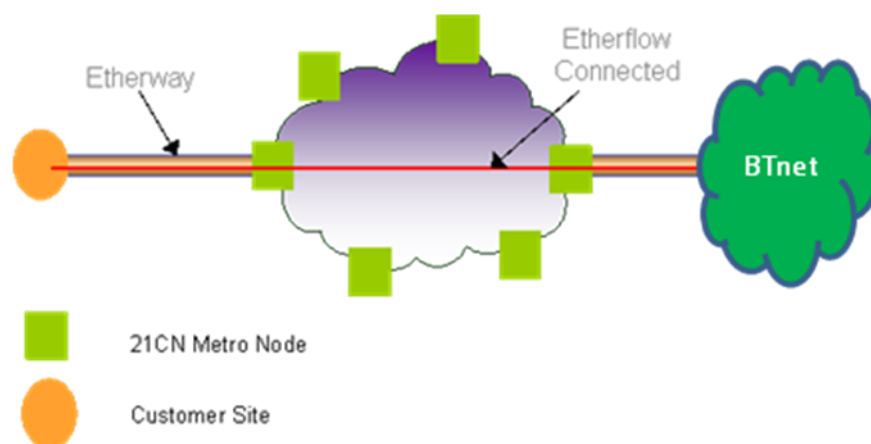
6 Access Network

BTnet uses BT's 21CN Etherflow connection-oriented Ethernet VPN service to connect your service to the BTnet core network.

BT Etherflow consists of two components which form the building blocks of the service. These are Etherways and Etherflows.

Etherways are the circuits, or bearers, that provide connectivity from your site to a Point of Presence (PoP) on BT's 21CN.

An Etherflow Virtual Connection is the logical connection that provides the data transmission path from your site to the BTnet core network.



6.1 Etherways

Etherways provide the physical connection between your site and the 21CN access nodes.

There are four configuration parameters for Etherways:

- Speed available (Up to 10Mbit/s, 10Mbit/s, 100 Mbit/s or 500Mbit/s)
- Resilience (Standard or Protected), to be made available in the future.
- VLAN Awareness: BTnet uses the 'Port Based' setting
- Physical Interface

6.1.1 Speed options

The available speed options and their provision types are:-:

- Up to 10Mbit/s Etherway (Copper)
- 10Mbit/s Etherway (Fibre)
- 100Mbit/s Etherway (Fibre)
- 500Mbit/s Etherway (Fibre)

Etherway Copper based services provide access at speeds from 1Mbit/s up to 10Mbit/s over bonded copper services with a lead time of 30 working days.

Etherway speed upgrades for fibre accesses and bandwidth upgrade for Etherway Copper are planned for release in the future.

6.1.2 Resilience

BT Etherflow will offer resilience options that utilise the Openreach Resilience Option 2 in the future.

For detailed information of the Openreach products, please refer to the Openreach web pages: <http://www.openreach.co.uk/orpg/products/>

Further technical information is available in SIN 476 available from www.sinet.bt.com

6.1.3 VLAN Awareness

As part of the configuration of the Etherway, there is a choice of two VLAN configurations: Port Based and VLAN Aware. BTnet uses Port Based mode.

When an Etherway is used in Port Based mode, the switches within the BT network ignore any VLAN tags you might provide within an Ethernet frame. You may transmit 802.3 frames (no VLAN tags), 802.1Q (single tag) or double tagged frames.

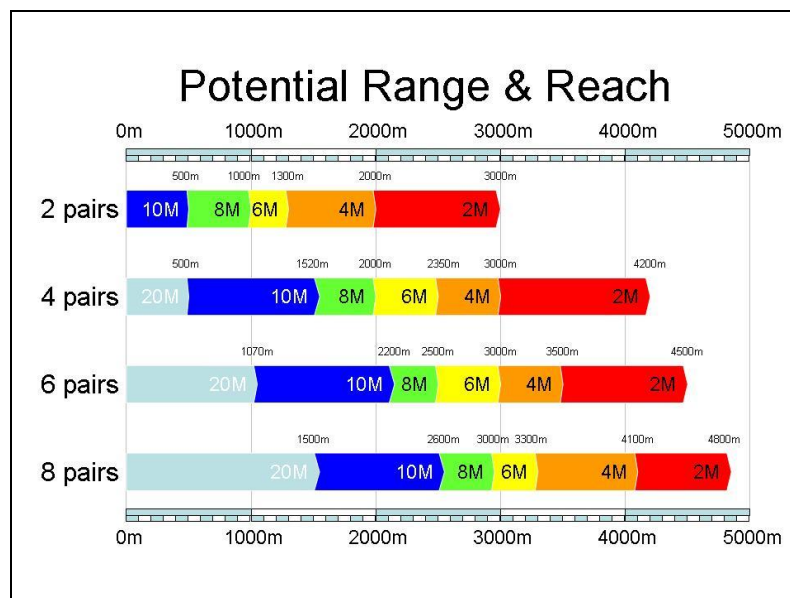
In the Port Based configuration only a single Etherflow can route through the Etherway. Port Based mode is used to connect two sites together to create an Ethernet Private Line (EPL) point-to-point network.

6.1.4 Physical interface

6.1.4.1 Etherway Copper Delivery

BTnet utilises the 21CN network's use of multiple (at least 2) bonded copper pairs to provide Internet service over an Ethernet interface between your site and the local serving exchange, based on Ethernet in the First Mile (EFM) technology. Ethernet in the First Mile is an approved Ethernet Standard, IEEE 802.3ah, that supports Ethernet access either using single to multiple copper pairs. Physical access is presented as a RJ45 Ethernet connection, via suitable Network Terminating Equipment (NTE) at your site.

BTnet EFM Range & Reach



6.1.4.2 Etherway Fibre Delivery

BTnet fibre delivered service is available over Etherway bearer speeds of 10, 100 and 500 Mbit/s, with 1Gbit/s available in an increasing number of areas. 21CN Ethernet access via fibre utilises core 21CN infrastructure and conventional Ethernet over Fibre access technology. Physical access to your site is via optic fibre, presented as an RJ45 Ethernet connection via suitable Network Terminating Equipment (NTE).

The radial distance between your premises and the 21CN PoP is limited to a maximum of 25Km for 10 & 100Mbit/s services and 35km via Extended Reach for 500Mbit/s.

6.1.4.3 Physical Interfaces

The 10Mbit/s Etherway (fibre) is provided with a 10BaseT interface.

The 100Mbit/s Etherway (fibre) is provided with a 100BaseT interface.

The BTnet 500Mbit/s service uses the 1Gbit/s Etherway (fibre) which has a choice of 1000Base-SX or 1000Base-LX interface.

6.2 Etherflow Virtual Connections

Etherflow Virtual Connections are the logical connections that provide the end-to-end connectivity through the Etherways and BT's 21st Century Network to enable data traffic to pass from one site to another.

Initially there are two configuration parameters:

- Traffic Class – Premium (Uncontended)
- Bandwidth

6.2.1 Traffic class

BTnet is provided with Premium class of service which is optimised to support delay-sensitive business voice and data applications where low end to end delay, with minimal packet loss, is a requirement.

The Premium traffic class is an uncontended service and is configured so that the Committed Information Rate (CIR) is equal to the Peak Data Rate (PDR), which is equal to the Service Bandwidth. All the traffic within the Service has equal priority and the full bandwidth rate can be utilised.

6.2.2 Bandwidth

BTnet is a highly flexible service, so there are a large range of port speed options available as outlined in the table below.

Etherway bearer Speed	Port Speed
10Mbit/s	2Mbit/s 3Mbit/s, 4Mbit/s, 5Mbit/s, 6Mbit/s, 7Mbit/s, 8Mbit/s, 9Mbit/s, 10Mbit/s
100Mbit/s	2Mbit/s - 100Mbit/s
500Mbit/s (1Gbit/s Etherway)	10Mbit/s - 500Mbit/s Available in 10Mbit/s increments

The port speed of each Etherflow may be flexed up or down within the capacity of the Etherway bearer used. You only need to retain a speed for minimum of 5 days before

changing it again. This will be very useful if you have seasonal bandwidth requirements, for example.

6.3 Frame size

The maximum frame size supported on the service is 1548 bytes.

6.4 Geographic coverage

The BTnet service will be available to sites which meet the radial distance requirements for the Etherway (fibre) service. These are 25km for 10 and 100 Mbit/s and 35Km for 500Mbit/s. The radial distance is measured between your site and the 21CN access node. Availability is always subject to survey after the order has been placed, and Excess Construction Charges may need to be applied.

Etherway Copper will be available to sites within the exchange catchment area of the 21CN core or access node.

The core and access nodes extend across the UK and Northern Ireland with the exception of Kingston upon Hull, Isle of Man, Isles of Scilly and the Channel Isles.

High level physical network architecture

The access network used by BTnet is BT's 21st Century Network (21CN). 21CN is a converged core network designed to consolidate all BT infrastructures into a single backbone

The access core has been built to be highly robust, with multiple resilient connections between equipment at each stage of the network, to ensure no breaks in routing, and dual vendor equipment to guard against bugs or breakdowns that might occur in a single vendor type of equipment. There are multi 10Gbit/s connections between dual vendor DWDM equipment covering the Core/Metro sites, and two physically separate MPLS core networks.

7 Service Level Agreement (SLA)

BTnet is covered by a Service Level Agreement, which will provide guarantees and targets in three areas; Installation, Availability and Network Latency. This enables BTnet to give you our commitment to a high standard of network performance.

Details of the SLA are available from your BT Account Manager.

8 Pre Order Support

Your BT Account Manager will provide help if you require more information. This includes technical, pricing and product information for moves, service additions, cessation, upgrades and new services.

9 Customer Service

BTnet provides a competitive SLA and aim to clear faults within 5 working hours of the fault being reported for BT for Fibre delivered services and 24 hours for EFM delivered services. A single point of contact is available to you for fault reporting.

To report a fault Tel: 0800 699879 (Option 2 then 2)

BTnet provides comprehensive arrangements for:

- order entry & provision management
- fault management
- billing

You can request on-line bandwidth utilization reports, covering

- Previous 24hrs
- Previous week
- Previous month
- Preceding months

For further information please contact your BT Account Manager, or email CNH.Flex@BT.com

10 Service Delivery

10.1 Service Delivery Overview

An appointed service desk will centrally manage the provision of a service purchased from BTnet. Delivery support will be available Monday to Friday between 8am and 5pm, excluding public holidays.

The service desk will co-ordinate and own the provision of your new order and progress it appropriately. A number of functions are carried out which includes project management (where appropriate), service design, commissioning and acceptance testing.

A project coordinator or project manager will be allocated to you and you will receive an event plan which explains the provisioning process and key stages.

Once the order validation and any necessary survey activity are complete, you will receive confirmation of acceptance of the order, target delivery dates, order reference number, and notification of any additional costs. You will be requested to verify your acceptance of any additional costs as a prerequisite to delivery.

The service desk will continue to manage delivery of the order through to completion and will provide you with regular progress updates.

A service pack will also be provided containing a guide explaining the service features, service specific detail, account detail and other relevant material. It will also include advice on how to contact the relevant service desk in the event of a service or invoicing problem or other enquiry.

Once the order is completed, the service desk will ensure that it has been delivered to your complete satisfaction. You may be requested to provide a satisfaction assessment of the overall support provided. Billing will only commence once the service has been delivered.

10.2 Additions, Modifications & Cessation

The initial request for additions, modifications and cessation may be made directly via your BT Account Manager. All activities will be coordinated in a similar way as previously described for new service delivery.

In the case of a cessation order, the service will be suspended and a final invoice issued prior to actual decommissioning of the physical BT elements of the service.

A cease order must be supported by an email or faxed letter on your headed note paper, to your BT Account Manager.

10.3 Lead Times

Service over 21CN	Target Service lead-time
2Mbit/s - 10Mbit/s EFM	30 working days
10Mbit/s Ethernet Fibre	70 working days
100Mbit/s Ethernet Fibre	70 working days
500Mbit/s Ethernet Fibre	70 working days

Note: 'Working days' refers to standard working hours, Monday to Friday, excluding public holidays. All lead-times are subject to site survey and line plant availability at the site.

11 Termination of Service

Termination of service details are covered by the Service Level Agreement and Terms and Conditions.

12 Service Management and Assurance

12.1 DoS Mitigation

BTnet proactively monitors traffic flowing into and out of its core network infrastructure in order to detect traffic anomalies and Denial of Service (DoS) attacks, resolve attacks and determine which network connections the attacks are via.

You have the option of enhancing the security on your BTnet internet access by adding proactive Distributed Denial of Service (DDoS) mitigation (Charge applicable). BT's proactive DDoS mitigation service mitigates attacks by monitoring the internet traffic for DDoS attacks, DoS floods, Protocol Misuse, Worms and behaviour anomaly based attacks. The DoS protection platform profiles normal behaviour and identifies attacks based on anomalous behaviour patterns. It allows authorised traffic profiled in agreement with you to continue unaffected by the attack, but filters out the attack traffic.

You should contact your BT Account Manager if you require further information on proactive Distributed Denial of Service (DDoS) mitigation to the BTnet service.

12.2 Cleanfeed

BTnet services have Cleanfeed as a standard feature; Cleanfeed blocks access to internet sites included on the Internet Watch Foundation (IWF) list. The system uses a filter to capture any attempts to reach URLs / IP addresses on the IWF black-listed websites list only and then black holes the traffic.

The system is designed to cater only for port 80 HTTP traffic through a special 2 stage filter that compares requests against known black-listed websites. All other traffic bypasses the filtering system. Attempts to access a blacklisted site will receive an **"HTTP Error 404 Website not Found"** message

BT plays no part in the construction or identification of sites contained within the IWF list. Nor does it add any other categories or items for consumer blacklisting. BTnet does not hold any records of access to sites on the IWF list. All traffic to IWF listed sites is black holed if you have not opted out of Cleanfeed.

If you would like to opt out, please contact your BT Account Manager.

Please note, any queries on the sites listed must be made directly with the IWF and not BT. Please see the IWF site for details (<http://www.iwf.org.uk/>) of the process to unblock incorrectly identified URLs sites.

13 Pricing

For a full explanation of BTnet prices, including provision, rental and added service charges, please contact your BT Account Manager.

14 Billing

You will be charged the relevant annual rental for the services you have taken. This will be billed quarterly in advance and your first bill will also include any applicable connection charge.

All bills will include a contact number for billing inquiries.

Billing will commence from the time that the BTnet service is delivered.

For billing enquires Tel: 0800 679320.

Email: btnet.ipservices@bt.com

15 Other Information

Further documentation is available from your BT Account Manager. These include:

- BTnet Service Level Agreement.
- Terms and conditions.
- BTnet Data Sheet (a comprehensive summary of BTnets key benefits and features).
- DDoS Data Sheet.
- Utilisation Report User Manual.

16 Abbreviations

The following terms and abbreviations in this document are defined and used as follows:

CPE	Customer Premise Equipment
CRF	Customer Requirement Form
DNS	Domain Name Service
DOS	Denial of Service
DDOS or DDoS	Distributed Denial of Service
DR	Disaster Recovery
EAD	Ethernet Access Direct (access circuit type)
EFM	“Ethernet in the First Mile” Technology
IP	Internet Protocol
ISP	Internet Service Provider
IWF	Internet Watch Foundation
LE	Local Exchange
NTE	Network Terminating Equipment
PA	Provider Aggregatable
PIR	Provider Independent Resource
POP	Point of Presence, a location where your bearers are physically interconnect to the BTnet service.
Port	The port is the point where the access circuit terminates with the BT network.
OLO	Other License Operators
SMTP	Simple Mail Transfer Protocol
VLAN	Virtual Local Access network
WES	Wholesale Extension Service (access circuit type)

Annexes

Annex 1: BTnet Features Summary

Feature	Details
Bearer speeds	Ethernet in the first mile (EFM): 2, 3, 4, 5, 6, 7, 8, 9, 10Mbit/s, Ethernet Line: 10, 100, 500Mbit/s
Support	Total Care: 24/7/365 on Fibre delivered services. Enhanced Care: 4hr response, 20 hr fix on EFM Ethernet services.
Service Contention	BTnet is an uncontended service
Service Management CPE	BTnet is supplied with a Service Management CPE by default, but can be provided without Service Management CPE (wires only) if requested.
Flexibility	You may increase or decrease port speed within bearer capacity.
Resilience options	Are a future release.
Static routed IP addresses	Are provided in line with RIPE guide lines.
Primary DNS	Up to 10 domain names free, subsequent names are chargeable.
Secondary DNS	Up to 250 domain names free, subsequent names are chargeable
News Feed	News feed
News Read	News read is a chargeable option
POP3 Mail	POP3 mail is a chargeable option
Domain name registration	Domain name registration options are available.
Customer reports	Available on request via your BT Account Manager
Term	1, 3 & 5 years contracts
Installation SLA	Please refer to appropriate SLA documentation
Availability SLA	Please refer to appropriate SLA documentation
US Latency	95milliseconds Round Trip Delay
UK Latency	20milliseconds Round Trip Delay
Proactive DDOS Mitigation	Is available as a chargeable optional security enhancement
Cleanfeed	Is available as standard, with option to opt-out

Annex 2: BTnet Bearer and Port Speeds Available

Bearer	Port Speed available	LAN Interface	Bearer Interface	Bearer protection
EFM 2Mbit/s - 10Mbit/s	2Mbit/s to 10Mbit/s in 1Mbit/s increments Subject to access class speed	10BaseT	2M G.703	Unprotected
10Mbit/s	2Mbit/s to 10Mbit/s in 1Mbit/s increments	100BaseT	10BaseT	Unprotected
100Mbit/s	2Mbit/s to 100Mbit/s in 1Mbit/s increments	100BaseT	100BaseT	Unprotected
500Mbit/s	10Mbit/s – 500Mbit/s 10Mbit/s increments (GigE interface)	1000BaseT 1000Base-SX (copper and fibre options available)	1000 BASE-SX	Unprotected

500Mbit/s Bearer Gig-E Presentation, without a Service Management CPE

If the service is being taken without a Service Management CPE, then the Gig-E presentation is via a port on the Openreach Bearer NTE. The NTE has a 1000Base-SX presentation via a Multimode dual SC optical connector for the WES product or a Multimode dual LC optical connector for EAD.

The optical fibre patch cords to be used on your side of the LES 1000 NTE must be 850nm wavelength, 62.5/125 or 50/125 micron multimode fibre with LC or SC connectors as determined by the Openreach Bearer product used.

Annex 3: Service Management CPE Types and Specification

Bearer Speed	Service Variant	Router Supplied (Cisco)*
10Mbit/s	Standard	1841
100Mbit/s	Standard	7204VXR or 3825
500Mbit/s	Standard	7206VXR/7201
10Mbit/s	BGP	2811
100Mbit/s	BGP	7204VXR or 3825
500Mbit/s	BGP	7206VXR/7201

*Note: This is typical Service Management CPE that may be supplied with your service, but may be subject to alteration by BTnet.

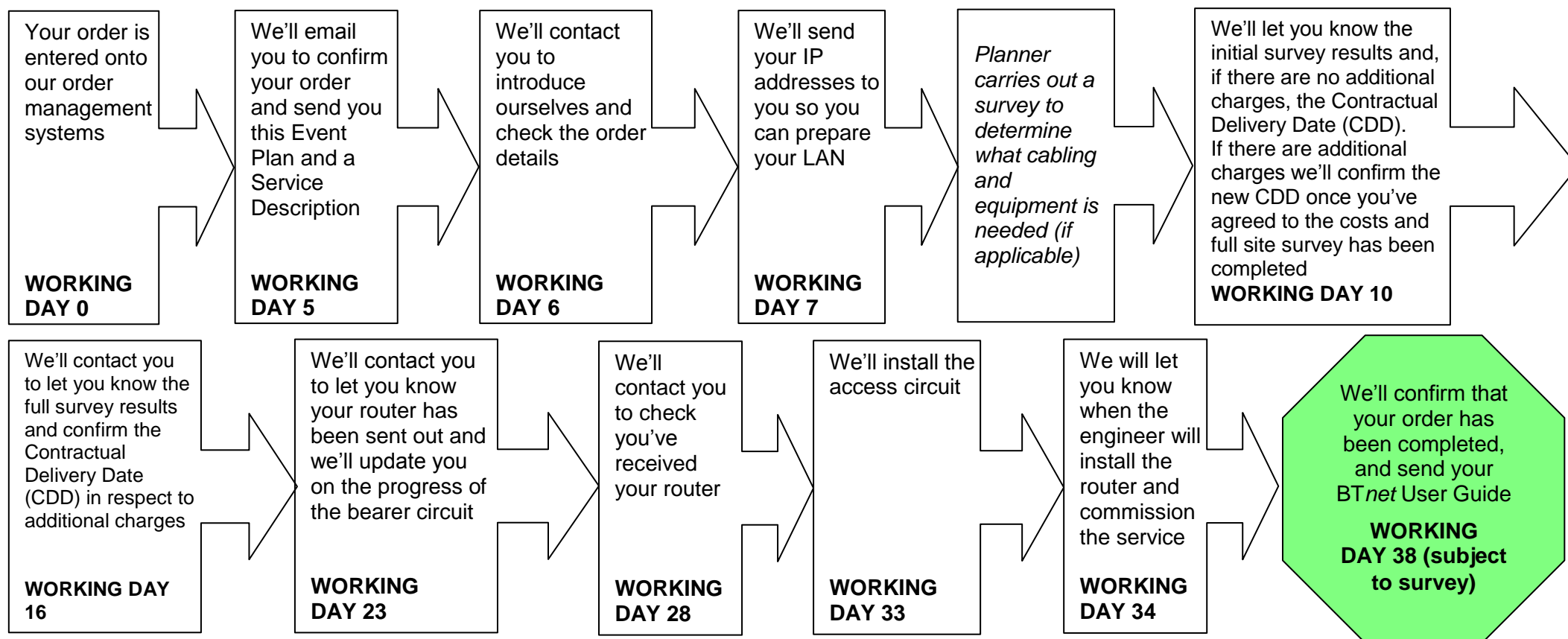
Router details:

Router Model	Cisco Part No.	Weight	Dimensions(H* W*D)	19" Rack Mountable	Power Usage
Cisco 1841	Cisco1841	(max) 6.2 lb (2.8 kg)	13.5 x 10.8 in. (343 x 274 mm) Height without rubber feet: 1.73 in (439mm) Height with rubber feet: 1.87 in (475mm)	No	50 Watts
Cisco 2811	n/a	(max) 14 lbs. (6.4Kg)	1.75 x 17.25 x 16.4 in. (44.5 x 438.2 x 416.6 mm)	Yes (1 RU high)	170 Watts
Cisco 2821	n/a	(max) 25 lbs. (11.36Kg)	3.5 x 17.25 x 16.4 in. (88.9 x 438.2 x 416.6 mm)	Yes (2 RU high)	280 Watts
Cisco 7204VXR	n/a	(max) 50 lbs. (22.7Kg)	5.25 x 16.8 x 17 in. (133.4 x 426.7 x 432 mm)	Yes (3 RU high)	370 Watts
Cisco 3825	n/a	(min) 23 lbs. (10.45Kg)	3.5 x 17.1 x 14.7 in (88.9 x 434.3 x 373.4 mm)	Yes (2 RU high)	300 Watts
Cisco 7201	CISCO7201	(max) 16.5 lbs. (7.48Kg)	1.75 x 19 x 16.9 in. (444 x 482.6 x 429.3 mm)	Yes (1 RU high)	150 Watts
Cisco 7206VXR	7206VXR/NP E-G2	(max) 50 lbs. (22.7Kg)	5.25 x 16.8 x 17 in. (133.4 x 426.7 x 432 mm)	Yes (3 RU high)	370 Watts

Annex 4 BTnet Provision – Event Plan for 10, 100, 500 Fibre Delivery

Thank you for choosing BT and placing an order for our BTnet Service. This is an outline of the process we'll follow to deliver your service, and highlights when we'll update you on the progress of your order...

Our provision trial lead time for this BTnet service is 38 working days from the date your order is entered onto our order management system (this may vary depending on the results of the site survey). If you've asked for an earlier delivery date we'll try to meet it but we can't promise to do so.

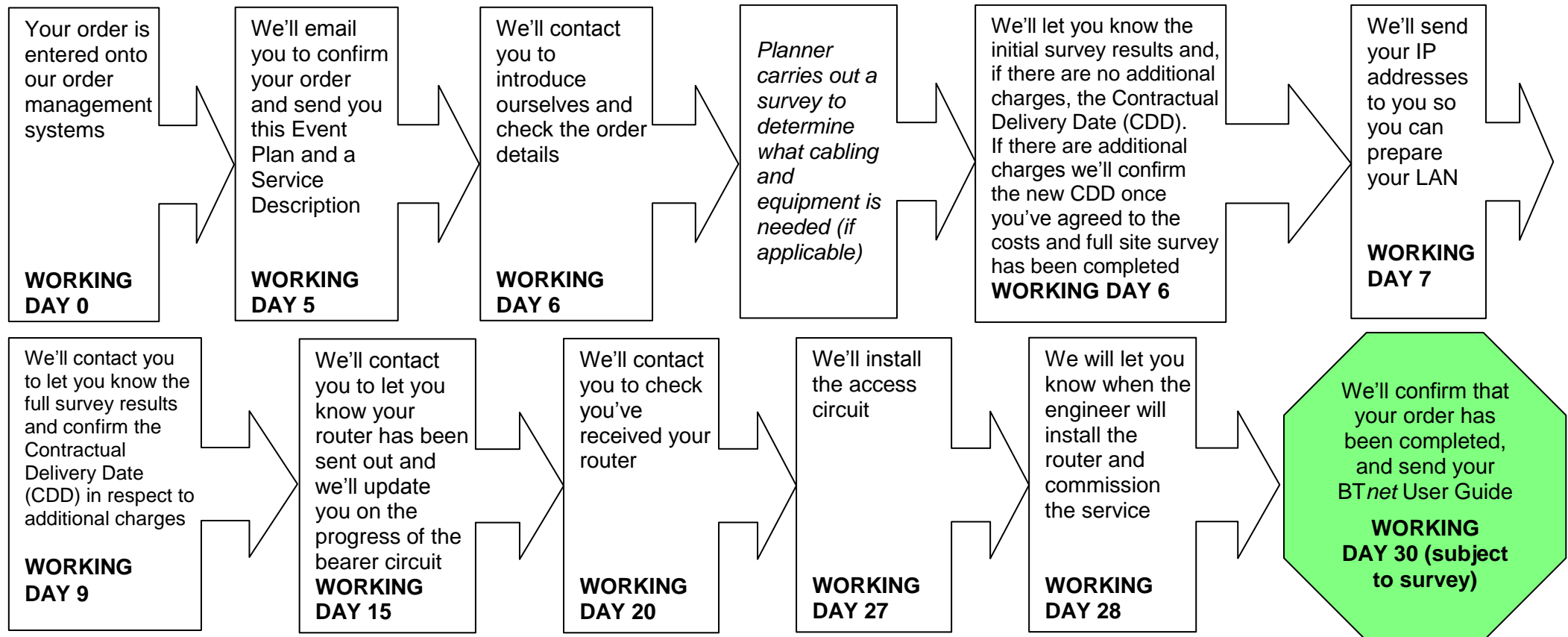


Important Information

- A dedicated member of our Installation Management Team will manage your order and keep you updated on the days highlighted in this plan. They'll also proactively escalate where our supplier has told us of any problems.
- All dates and prices are Subject to Survey, so the date for delivery and the days shown above will vary if there's insufficient network capacity or if there are other technical problems (in some cases, it could mean that BT isn't able to provide the service you've requested). The contractual delivery date could also be extended if there are customer delays (eg the site isn't ready, waiting for landlord wayleave sign-off, access problems, delays in accepting excess charges), force majeure, or if notice is required under the Traffic Management Act or Traffic Scotland Act.
- The price could be affected if special plant or work is required (like ducts or poles or construction work). These are usually identified at the initial planning stages, but could also be identified in the later stages of the delivery.
- If there are any problems that could impact on the price or agreed contractual delivery date we'll let you know immediately; we cannot proceed with service delivery unless we receive your approval for the revised price.
- For the purposes of the BTNet Premium Service Level Agreement, the current standard BTnet 70 working day lead time will apply.

Annex 5 BTnet Provision – Event Plan for 2Mbit/s to 10Mbit/s EFM Bearer

Thank you for choosing BT and placing an order for our BTnet Service. This is an outline of the process we'll follow to deliver your service, and highlights when we'll update you on the progress of your order (unless you advise us otherwise). Our published lead time for this BTnet service is 30 working days from the date your order is entered onto our order management system (this may vary depending on the results of site survey). If you've asked for an earlier delivery date we'll try to meet it but we can't promise to do so.



Important Information

- A dedicated member of our Installation Management Team will manage your order and keep you updated on the days highlighted in this plan. They'll also proactively escalate where our supplier has told us of any problems.
- All dates and prices are Subject to Survey, so the date for delivery and the days shown above will vary if there's insufficient network capacity or if there are other technical problems (in some cases, it could mean that BT isn't able to provide the service you've requested). The contractual delivery date could also be extended if there are customer delays (eg the site isn't ready, waiting for landlord wayleave sign-off, access problems, delays in accepting excess charges), force majeure, or if notice is required under the Traffic Management Act or Traffic Scotland Act.
- The price could be affected if special plant or work is required (like ducts or poles or construction work).
- These costs are usually identified at the initial planning stages, but could also be identified in the later stages of the delivery.
- If there are any problems that could impact on the cost or agreed contractual delivery date we'll let you know immediately and will ask for your approval.