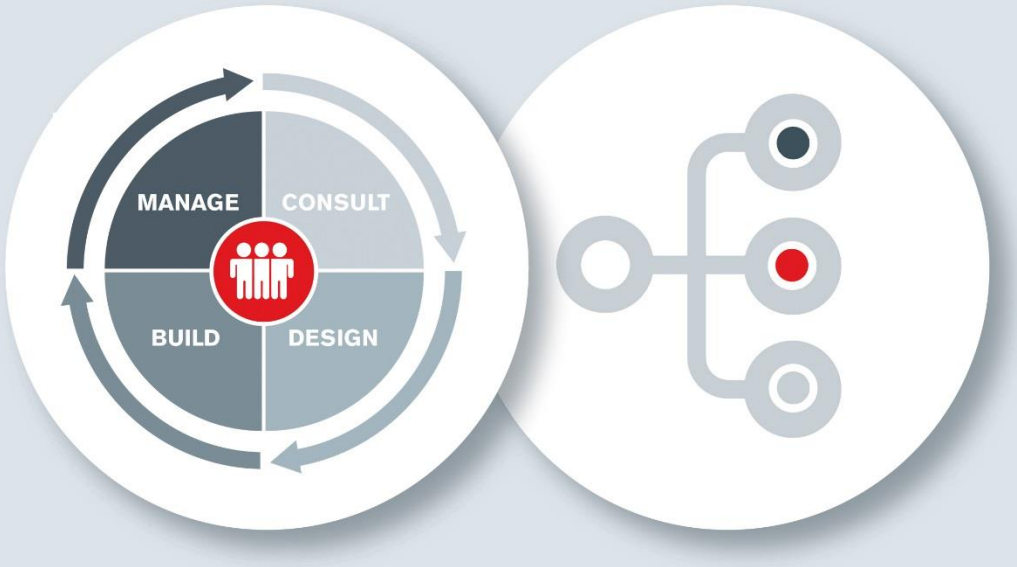
Claranet Component Description



Connectivity Component Description

Claranet's networking portfolio comprise many individual Connectivity Service components which are common to many solutions. Details relating to each available component can be found in this Service Description.

Version 10.9

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Contents

The Description

This Component Description describes the components that Claranet provide and details the responsibilities that you have and we have in relation to these. The Component Description forms part of the Agreement between the Parties and all terms used within this document are in accordance with the terms to be found in the Master Services Agreement.

Component overview

This document describes the individual components that can be utilised in many of the services found within Claranet's Networking portfolio. In your solution, whether it involves Internet Connectivity or MPLS networking, the components that make up that solution have specific technical options and metrics. These details, as well as information relating to their installation, management, maintenance and monitoring can be found below.

The components covered within this Component Description are:

- Mobile Broadband
- Broadband
- Fibre To The Cabinet (FTTC)
- Fibre to the Premises (FTTP)
- Ethernet over FTTC
- Ethernet First Mile (EFM)
- Ethernet
- Ethernet Separation

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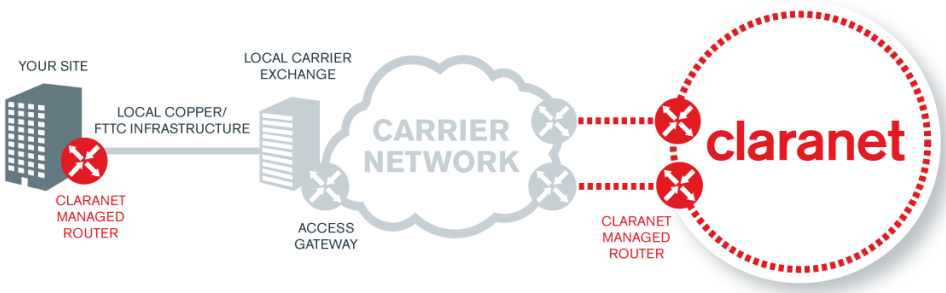
Claranet's connectivity services cover the access link to your premises, up to and including your Network Termination Equipment (NTE). A diagram outlining the structure of Broadband, Fibre to the Cabinet and Ethernet over Fibre to the Cabinet can be seen below.

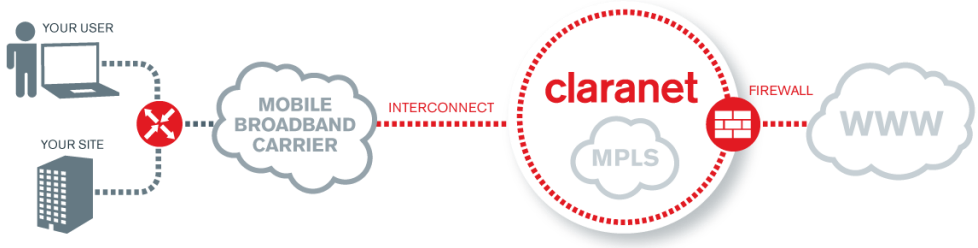
Diagram: The layout of Broadband, FTTC and EoFTTC



Components

Mobile Broadband

Claranet provides a range of Mobile Broadband Services offering internet connectivity or secure integration of remote offices and mobile broadband devices into the Claranet MPLS network. The service is provided using Three as a Mobile Network Operator. These networks support 4G Lte and 4G HSDPA+. 4G



Claranet offers a range of Mobile Broadband services which may be used as the primary connectivity method or as a backup to fixed line Service. Four options are available:

- **Mobile Broadband –** Mobile Broadband managed router
- **Mobile Broadband SIM Only –** Mobile Broadband SIM for use in tablets or dongles
- **Mobile Broadband Backup –** Automatic failover from fixed line service
- **Fast Guard –** Service offering a standby Mobile Broadband router which may be deployed to a site for emergency connectivity

The table below provides a comparison between the Mobile Broadband Primary Services and the Mobile Broadband Backup Services available.

Table: Mobile Broadband Service Comparison

Service	Mobile Broadband Primary Services		Mobile Broadband Backup Services	
	Mobile Broadband	SIM Only	Backup	Fast Guard
Network service	4G	4G	4G	4G
Managed Router	Yes	No	Yes	Yes
Monthly inclusive data options [1]	1GB 5GB 10GB	1GB 5GB 10GB	30GB included	1GB 5GB 10GB

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Out of bundle data charge per MB[2]	2.5 pence / MB	2.5 pence / MB	2.5 pence / MB	2.5 pence / MB
Minimum contract	6 months	1 month	12 months	6 months
Fixed IP	Yes	Yes	Yes	Yes
Availability Service Levels	N/A	N/A	N/A	N/A

[1] Monthly data allowance includes download and upload usage.

[2] Out of bundle data charge includes download and upload usage

Mobile Broadband

The Mobile Broadband service provides Internet connectivity or integration into your Claranet MPLS network by providing a Claranet Managed Mobile Broadband router. The service may be implemented where no fixed line connectivity is available or required to connect remote offices or users.

The Mobile Broadband service is integrated into Claranet's core network, authentication and allocation of IP addresses is performed by Claranet allowing your IP LAN ranges to be utilised when part of an MPLS solution.

For Mobile Broadband services which are within an MPLS network, Internet access is achieved through your Internet Gateway which may be either through centralised firewalls in Claranet's Data Centre or via your premise firewall. This allows usage policies to be configured for offices or users on Mobile Broadband, controlling access as per any other node on the MPLS network.

Table: Mobile Broadband service features

Service	Mobile Broadband with Managed Router
Network service	4G
Monthly inclusive data options	1GB 5GB 10GB
IP address	Fixed IP
IP ranges	MPLS: IP ranges from customer LAN may be allocated Maximum two subnets routed over Mobile Broadband
Router options	Cisco Draytek
Internet access	Direct to Internet or through corporate firewall when configured as part of MPLS network

What Claranet will do

Configuration of Mobile Broadband routers: Configure the router as a node on the MPLS network or with public facing IP addresses with NAT configured on the router. No NAT options are available. Mobile Broadband routers are configured to utilise both 3G and 4G services so will utilise the strongest service type. This is to ensure continuation of the service if the Mobile Broadband router is moved to a non 4G area or if the 4G signal strength is low.

What you will do

Moving a Mobile Broadband router: Ensure that if a router is moved from one location to another, it uses the same router configuration and IP structure such as when a new temporary site may be required.

Location change: Inform Claranet of any location change where a replacement router is required. Failure to inform Claranet of the correct location, could result in a replacement engineer being dispatched to the wrong location.

Moving a Mobile Broadband router in an emergency: Refer to the Fast Guard service in the event that a solution requires a Mobile Broadband router to be moved from one location to another as an emergency backup.

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Mobile Broadband service restrictions

Service	Restriction
4G SIMS	Claranet 4G SIMs will only work in devices that support 4G, they will **not** work in 2G only devices. SIMS also support 3G service for areas with no 4G coverage.
Network barring	Claranet Mobile Broadband SIMs are network barred from making voice calls and are also network barred from roaming outside of the UK.
CHAP authentication	It is possible to connect devices to Claranet Mobile Broadband that do not support CHAP (Challenge Handshake Authentication Protocol) as the authentication mechanism. In these circumstances PAP (Password Authentication Protocol) will be used as the authentication mechanism, but you must make yourself aware of the inherent limitations within PAP. Claranet is aware that certain Apple products including all models of iPad do not support CHAP
Quality of Service	Quality of Service (QoS) functionality is not offered on any Claranet Mobile Broadband Services
Availability	The Claranet Mobile Broadband Service is subject to availability
Windows version recommendation	For Windows devices with integrated Mobile Broadband, Windows version 8.1 or later is recommended
Authentication of access	Authentication of access, IP connectivity and IP address allocation remains the responsibility of Claranet and the Claranet network

Mobile Broadband SIM Only

The SIM Only service provides internet connectivity or secure integration of mobile devices into the Claranet MPLS network. This allows remote workers to gain access to their corporate IT infrastructure from any UK location where Mobile Broadband is available.

For security the SIM only service when configured for MPLS is delivered into a logically separate MPLS network, therefore access to your MPLS network is achieved through the corporate Firewall hosted within Claranet's Data Centres.

When part of an MPLS solution access to the Internet may be achieved through the corporate Firewall. Access may be controlled as all Mobile Broadband devices will be part of your individual private MPLS network, therefore allowing centralised usage policies and if required, limit access to the Internet.

What Claranet will do

Provision of credentials: Provide a Mobile Broadband SIM and authentication credentials to allow the Mobile Broadband enabled device to be connected to the Claranet MPLS network or the Internet. The authentication credentials will be supplied by email (or by other means previously agreed) so that they are available to you at the time the card(s) are received.

Replacement of a faulty SIM: Supply a replacement SIM when the SIM is found to be faulty but cannot provide any support in troubleshooting any connectivity issues. Delivery of the SIM card(s) will be made to allocation specified by you.

Activation of SIM cards: Claranet will activate the SIM cards at the time of dispatch.

What you will do

Suitability: Retain responsibility for the suitability of the Mobile Broadband service for your requirement.

Compatibility: Retain responsibility to ensure that the device you intend to use the SIM in, is compatible with the Claranet network.

Troubleshooting: Troubleshoot all connecting issues that are experienced, except where it is believed that the SIM is faulty.

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Table: SIM only service features

Service	SIM only
Network service	4G
Monthly inclusive data options	1GB 5GB 10GB
IP address	Fixed IP
SIM type	Multi SIM (Standard, Micro, Nano)
Internet access	Direct to Internet or through corporate firewall when configured as part of MPLS network
Corporate Network Access	Through corporate firewall
Authentication	Device must support CHAP or PAP

Theft or loss of Mobile Broadband SIM cards

What you will do

Responsibility for equipment: Retain responsibility any equipment provided by Claranet for use on your premises and you must ensure that it is reasonably protected from potential theft or loss.

Maintaining a record of the ICCID: Keep a record of the SIM identity code (s) so that in the event of the theft or loss of a SIM, you can report the ICCID to Claranet.

Reporting any loss: Report any theft or loss as soon as it is discovered, quoting the ICCID to Claranet in order to identify the individual SIM.

Liability: Accept liability for the usage of the Mobile Broadband connection and for any potential breach of network security in the event of theft or loss until the theft or loss has been reported and Claranet has taken steps to prevent any further use of the Mobile Broadband connection. Claranet accepts no responsibility for this.

Mobile Broadband Backup

The Mobile Broadband Backup service is aimed at providing an automatic failover from a Broadband or FTTC service.

What Claranet will do

Broadband and FTTC with Mobile Broadband Backup: Ensure that your primary circuit will fail over to a Mobile Broadband backup service when the routing protocol is able to detect a line fault in the event that your Premises Equipment detects a line fault. Certain line faults are not detectable by the routing protocol and in such cases the primary circuit will not fail over to the Mobile Broadband backup service. Once the primary circuit has been re-established, traffic will move back onto the primary circuit.

Target fail over time is between 10 and 180 seconds**.** IP addresses which are routed on the primary circuit will be carried over to the Mobile Broadband backup service

The features of this service include:

- Different transmission medium
- Potentially the same serving exchange
- There is no guaranteed diverse route

Ethernet over FTTC with Mobile Broadband backup: Support Cisco routers only if you take Ethernet over FTTC with the Mobile Broadband backup.

Mobile Broadband Backup testing

What Claranet will do

Testing your Mobile Broadband backup service: If you subscribe to the Mobile broadband backup service, it is recommended a test failover is performed to ensure sufficient signal strength at that location. It is also recommended to retest if mobile broadband equipment is relocated.

Fast Guard

The Fast Guard service is an option that provides a Mobile Broadband router or pool of routers held by you. In the event of a fixed line service failing at one of your sites and is considered to be ‘hard down’ for a foreseeable amount of time such as the example scenarios detailed below, the Fast Guard service may be invoked for emergency connectivity.

What Claranet will do

Reconfiguring the mobile broadband router: Configure the mobile broadband router to integrate into the network at the impacted site following the receipt of a change request.

Claranet systems: Change Claranet's systems to implement the Mobile Broadband router for the impacted site.

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Fast Guard implementation where a primary line is failing:

Fast Guard may be implemented in the following scenarios:

- Fibre or cable break scenarios e.g. cables breaks or faults within the carrier network leading to extended resolution times
- Scenarios due to cable theft
- Emergency connectivity required if customer premise becomes inhabitable
- Delayed installations due to wayleave issues.

Fast Guard will NOT be implemented in the following scenarios:

- CPE Router failure – standard fault processes will apply
- Primary line failure - standard fault processes will apply, unless long term fault is identified.

What you will do

Possession of the Mobile Broadband router: Maintain possession of the router whilst it is not in use.

Shipping of router: Ship the router to the impacted site when required.

Change request: Make any change requests to Claranet by raising a ticket through Claranet Online.

Maintenance windows: Provide a change window to Claranet to effect changes from the choices available.

Remote hands: Provide remote hands to disconnect/connect the existing router and to disconnect/connect the Mobile Broadband router.

Provision of router details: Provide Claranet with any required details necessary to allow Claranet to make any configuration changes e.g. serial number.

Recovery of the Mobile Broadband router: Recover the Mobile Broadband router after the event.

The table below outlines the features of the Fast Guard service

Table: Fast Guard service features

Service	Fast Guard
Network service	4G
Monthly inclusive data options	1GB 5GB 10GB
IP address	Fixed IP
IP ranges	IP ranges from your LAN may be allocated. Maximum two subnets routed over Mobile Broadband
Router options	Cisco Draytek
Internet access	Direct to Internet or through corporate firewall when configured as part of MPLS network

Standard Change response and fix times apply to the Fast Guard service as detailed in the table below. It is recommended that you provide Claranet with early notification of a Fast Guard change request to allow sufficient time to coordinate the change. The table below outlines the features of the Fast Guard change response / fix times.

Table: Fast Guard fix times for change requests

Level of change request	Response / Fix time
Emergency change response	4 hours
Emergency change fix	24 hours
Planned change fix	48 hours

Mobile Broadband coverage and performance

What Claranet will do

Mobile Broadband availability check: Perform a desk based check of the 4G availability using a tool provided by our network partner. This check will indicate (as an estimate) whether your location has:

- No 4G available
- An outdoor signal is available
- An indoor and outdoor signal is available

No 4G availability: If the tool indicates that no 4G Service is available then Claranet will **not** be able to provide a 4G resilience service at that location

4G signal is only available outdoors: If the tool indicates that only an outdoor signal is available the service may still be available but would require additional work to be carried out in order to supply and fit an external antenna. Claranet is happy to provide a quotation to carry out additional antenna work at your premises.

4G signal is available both indoors and outdoors: If the tool indicates that an indoor & outdoor signal is available it is likely that the 4G Resilience Service can be provided. However due to local environmental conditions (such as the location of the 4G device within your building or interference from other equipment such as air-conditioning units etc.) then it may be the case that in order to provide the service additional work may be required. Claranet is happy to provide a quotation to carry out additional work.

Site Survey: In extreme circumstances despite the tool suggesting that an indoor & outdoor signal is available it may be the case that the service cannot be provided. It is also possible for Claranet to carry out a 4G site survey at your premises in order to accurately determine whether a 4G Resilience Service can be provided with or without an external antenna. Claranet is happy to provide a quotation to carry out such a survey.

Performance: The performance of a 4G data connection is dependent upon a number of factors including the signal strength, environmental conditions (which can include atmospheric conditions and inference from electrical equipment such as air-conditioning systems) and cell congestion. The connection speed in K/Mbps will vary over time depending on these and other factors and cannot be readily predicted.

What you will do

Broadband with Mobile Broadband backup: Take into account that the reduced bandwidth and performance of 4G when compared with Broadband when you are determining which type of traffic you pass across the service when it is running in resilience mode.

Mobile Broadband data usage and billing

Mobile broadband data usage is measured on a per calendar month basis. Data allowances come as packages of Gigabytes (GB), your data allowance is consumed for data sent and received over the mobile network.

Data Usage will be invoiced as per below:

- Monthly package rental – Invoiced monthly in advance
- Additional data usage – Invoiced monthly in arrears

What Claranet will do

Reaching your data allowance: Send an email to your nominated contact to let you know. If you go over your data allowance, you will still be able to access the MPLS network however any additional data will be charged for.

Mobile Broadband data allowance and regrade options

The monthly data allowance may be re-graded within the following conditions:

- Upgrade or Downgrade can be made once per calendar month
- Downgrades cannot be made within the original contract period
- Upon the completion of the data allowance re-grade a minimum contract period shall apply:
  - Mobile Broadband: 6 months
  - Fast Guard: 6 months
  - SIM Only: 1 month

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Broadband

Claranet Broadband is a business grade broadband service. Claranet Broadband offers increased productivity and efficiency for businesses and is ideal for delivering broadband technology to remote offices and home workers delivering cloud applications to distributed workforce effectively and economically.

Options available

There are two Broadband Services available; Broadband Core and Broadband delivering up to 20Mbit/s download speed and details of these can be seen in the table below:

Table: Broadband options

Service	Broadband Core	Broadband
Bandwidth Options Download/ Upload (Mbit/s/ Kbit/s)[1]	Up to: 20Mbit/s download 448Kbit/s upload	Up to: 20Mbit/s download 1Mbit/s upload
Annex M[1] Offering up to 2.5Mbit/s upload	No	Optional
Elevated Best Effort[2]	No	Optional

1. Annex M only available on ADSL 2+ Services.
   Not all ADSL 2+ circuits are capable of supporting Annex M
2. Elevated Best Effort is available only on BT 21CN Services

What Claranet will do

Broadband speeds: Deliver ADSL 2+ Services as standard where coverage exists offering download speeds of up to 20Mbit/s. If no ADSL 2+ coverage exists at the location an up to 8Mbit/s Service will be provided. The speed achieved will vary dependent on distance from the serving exchange, potential electronic interference and the quality of copper cabling.

Areas with NO ADSL 2+ coverage: Provide a service with up to 8Mbit/s.

Either of the two broadband options can be configured with the options shown in the table below.

Table: Broadband configurations

Service	Broadband Wires Only	Managed Broadband	Managed Broadband + 4G Backup	Broadband + Broadband Backup
Bandwidth Options (Mbit/s/ Kbit/s)[1]	Up to 20Mbit/s 1Mbit/s	Up to 20Mbit/s 1Mbit/s	Up to 20Mbit/s 1Mbit/s	Up to 20Mbit/s 1Mbit/s
Managed Router	No	Included	Included	Included
Download Limits	Fair Usage Policy	Fair Usage Policy	Fair Usage Policy	Fair Usage Policy
Care Level Options	Standard	Standard Business Enhanced	Standard Business Enhanced	Standard Business Enhanced
Reporting Options		Claranet Online ClaraCare Vision	Claranet Online ClaraCare Vision	Claranet Online ClaraCare Vision

1 - Download and Upload bandwidth will be determined by distance from the exchange, quality of copper and internal wiring.

Broadband Annex M

Annex M is an optional feature of ADSL 2+ which boosts the upload speed by trading off between 10%-15% of the download speed. The ADSL 2+ Annex M standard is:

- ADSL 2+ Annex M ITU-T G.992.5

Annex M is a rate adaptive product and will synchronise up to the highest upstream line rate possible, up to 2.5Mbit/s upload. The upload bandwidth will be determined by the distance from the BT exchange and the quality of the copper line.

Annex M is not available on lines that return an Access Network Frequency Plan response as “long”, this equates to about 41% of lines.

Line installation

Broadband must be delivered over a PSTN service and in order to receive a Broadband Service you require an active analogue (PSTN) line with British Telecommunications plc (BT).

DSL services work over copper based lines between your site and your local exchange and in order to activate a DSL service, sufficient lines must be available. These lines can be either a New line or a Shared line.

What Claranet will do

Installation of a new line: Install a new PSTN line as an additional service when needed, to deliver the Broadband service. Claranet retains ownership of this new line. The installation lead time for a new PSTN line is between 15-30 working days. Once installed, there is a further 7-10 working days lead time for the Broadband to be installed.

Use of an existing PSTN line: Use an existing PSTN line to provide your DSL service where this is required and available. Your DSL service shares the line with the existing PSTN. The installation lead time for Broadband onto the existing line is between 7-10 working days.

What you will do

Use of an existing PSTN line: Provide an existing PSTN line if you decide to provide the DSL service over an existing PSTN line. You will retain ownership of this PSTN line.

Elevated Best Effort

Elevated Best Effort improves speed during the busiest times on the network. Elevated traffic is given preferential weighting within the Broadband Remote Access Server (BRAS) which gives a higher IP throughput under congestion during busy times. The weighting is applied to all traffic and does not distinguish between different traffic types e.g. VoIP and HTTP.

Rate Adaption

Your Broadband service will rate adapt to the highest stable speed possible.

What Claranet will do

Rate adaption and initial fluctuation: Rate adapt your broadband service to the highest stable speed possible. The maximum line rate is calculated during the first 10 days of service. Your broadband router must be connected for a minimum of 15 minutes during this period. If this has not been achieved, no line rate will be set and faults only accepted if the line rate is below 288kbit/s. During the initial 10 day period the broadband service may fluctuate as the service determines what speed the line can support. Your actual line rate is dependent on line length, line condition, end user wiring and the equipment at your premises.

Fixed rate

In some instances a fixed rate service may be required; for example, if a circuit is a long distance from the exchange. Fixed Rate ADSL services tend to operate at lower speeds than rate-adaptive services, but they will not vary from that speed.

What Claranet will do

Inability to maintain the required speed: If the required speed is deemed to be unsupportable on a given line, the service will be deemed to be unavailable.

Broadband resilience

Your Broadband has a number of resilience configurations.

What Claranet will do

Broadband with either Broadband backup or FTTC backup: Ensure that your primary circuit will fail over to a backup service when the routing protocol is able to detect a line fault in the event that your Premises Equipment detects a line fault. Certain line faults are not detectable by the routing protocol and in such cases the primary circuit will not fail over to the backup service. Once the primary circuit has been re-established, traffic will move back onto the primary circuit.

The target fail over time is between 10 and 300 seconds. Your IP addresses which are routed on the primary circuit will be carried over to the backup service.

Testing your Broadband backup service: Work with you to perform a failover test to your backup circuit once the circuit is installed. Claranet recommends that a failover test is performed of not less than one hour to establish a line rate on the broadband circuit. When the initial line rate is being established there may be a period of intermittent

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availability where the circuit may synchronise frequently. If no test backup is performed, in the event of the first failover to the backup circuit, intermittent availability may be experienced while an initial line rate is established.

Broadband with Mobile Broadband backup: Ensure that your primary circuit will fail over to a Mobile Broadband backup service when the routing protocol is able to detect a line fault in the event that your Premises Equipment detects a line fault. Certain line faults are not detectable by the routing protocol and in such cases the primary circuit will not fail over to the Mobile Broadband backup service. Once the primary circuit has been re-established, traffic will move back onto the primary circuit.

Target fail over time is between 10 and 180 seconds**.** IP addresses which are routed on the primary circuit will be carried over to the Mobile Broadband backup Service

The features of this service include:

- Different transmission medium
- Potentially the same serving exchange
- There is no guaranteed diverse route

What you will do

Broadband with Mobile Broadband backup: Take into account that the reduced bandwidth and performance of Mobile Broadband when compared with Broadband when you are determining which type of traffic you pass across the service when it is running in resilience mode.

For more information on the resilience options, please see **Appendix: Resilience**

Broadband care levels

Claranet provide three levels of care:

- Standard Care
- Business Care
  Offering an expedited faults process to resolve Broadband faults in a reduced time
- Enhanced Care
  Offering an extended supplier working hours and onsite engineers available 7 days a week

A table outlining the main difference between the care levels can be seen below.

Table: Broadband care levels

Service	Standard Care	Business Care	Enhanced Care
Response time	1 Hour	1 hour	1 hour
Target fix time	48 working hours	24 working hours (2 Business days)	24 working hours (2 Business days)
Service Desk working hours	Operates during normal working hours 08:00-20:00 Monday – Friday. We will endeavour to resolve an issue within 48 working hours from the fault being reported.	Operates during normal working hours 08:00-20:00 Monday - Friday. In addition we will endeavour to resolve an issue within 24 working hours of the fault being reported.	Operates during normal working hours 08:00–20:00 Monday - Sunday. In addition we will endeavour to resolve an issue within 24 working hours of the fault being reported.
Supplier engineer site visits	Monday-Friday 08:00 – 18:00 Excludes Bank Holidays	Monday-Friday 08:00 – 18:00 Excludes Bank Holidays	Monday- Sunday 08:00 - 20:00 Includes Regional & Bank Holidays
Supplier working hours	Monday – Friday 8:00-20:00	Monday – Friday 8:00-20:00	Monday – Sunday 24 x 7

Incompatible products and services

The Broadband service is not compatible with certain products and services including

- 30k loop;
- Private Circuits;
- ISDN – all types;
- Red ABC;
- RedCare ISDN;
- Meter Pulse Facility;

- PBX and AUX lines that do not terminate on an NTE5;
- Caller Redirect;
- Telecom Red – RedLine;
- Red Alert;
- FeatureNet;
- FeatureLine – Hunt Groups; and
- Light User Scheme.

Fibre to the Cabinet (FTTC)

Fibre to the Cabinet (FTTC) is an asymmetrical Next Generation Access Service based on VDSL2 Technology. The Service is provided by fibre from the serving exchange to the nearest street cabinet and then by copper between the cabinet and Customer premises. By reducing the length of copper cabling required to deliver the Service, dramatic increases to both downstream and upstream speeds are achieved

FTTC offers increased productivity and efficiency for businesses and is ideal for delivering fast broadband technology to remote offices and home workers.

In order to receive a FTTC Service an active analogue (PSTN) line with British Telecommunications plc (BT) is required.

What Claranet will do

Coverage and availability: Deliver a FTTC service where this is available. It should also be noted that FTTC coverage is not available in all areas of the UK at this time. Availability is also restricted to a certain distance from the street cabinet.

FTTC speeds: Deliver FTTC connectivity speeds of between 2Mbit/s and 80Mbit/s download and up to 20Mbit/s upload. The speed achieved will vary dependent on distance from the serving exchange, potential electronic interference and the quality of copper cabling.

Options available

There are a number of FTTC packages available.

Table: FTTC options

Service	FTTC	Managed FTTC	Managed FTTC + 4G Backup	FTTC + FTTC or Broadband Backup
Bandwidth Options – Download/Upload (Mbit/s)[1]	80/20 40/10	80/20 40/10	80/20 40/10	80/20 40/10
Managed Router	No	Included	Included	Included
Download Limits	Fair Usage Policy			
Care Level Options	Standard	Standard Business Enhanced	Standard Business Enhanced	Standard Business Enhanced
Elevated Best Effort	Option	Option	Option	Option
Reporting Options		Claranet Online ClaraCare Vision	Claranet Online ClaraCare Vision	Claranet Online ClaraCare Vision

1. Download and Upload bandwidth will be determined by distance from the green cabinet, quality of copper and internal wiring

Line installation

What Claranet will do

Installation of a new line: Install a new PSTN line as an additional service when needed, to deliver the FTTC service. Claranet retains ownership of this new line. The installation lead time for a new PSTN line is between 15-30 working days. Once installed, there is a further 20 working days lead time for the FTTC to be installed.

Use of an existing PSTN line: Use an existing PSTN line to provide your FTTC service where this is required and available. Your FTTC service shares the line with the existing PSTN. The installation lead time for Broadband onto the existing line is 20 working days.

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What you will do

Use of an existing PSTN line: Provide an existing PSTN line if you decide to provide the FTTC service over an existing PSTN line. You will retain ownership of this PSTN line.

Elevated Best Effort

Elevated Best Effort improves speed during the busiest times on the network. Elevated traffic is given preferential weighting within the Broadband Remote Access Server (BRAS) which gives a higher IP throughput under congestion during busy times. The weighting is applied to all traffic and does not distinguish between different traffic types e.g. VoIP and HTTP.

What Claranet will do

Upgrading to Elevated Best Effort: Issue a new 12 month minimum period contract if an FTTC circuit is upgraded to Elevated Best Effort after the initial installation.

Rate Adaption

Your FTTC service will rate adapt to the highest stable speed possible.

What Claranet will do

Rate adaption and initial fluctuation: Rate adapt your FTTC service to the highest stable speed possible. The maximum line rate is calculated during the first 10 days of service. Your broadband router must be connected for a minimum of 15 minutes during this period. If this has not been achieved, no line rate will be set and faults only accepted if the line rate is below 288kbit/s. During the initial 10 day period the service may fluctuate as the service determines what speed the line can support. Your actual line rate is dependent on line length, line condition, end user wiring and the equipment at your premises.

Fixed rate

In some instances a fixed rate service may be required; for example, if a circuit is a long distance from the exchange. Fixed Rate FTTC services tend to operate at lower speeds than rate-adaptive services, but they will not vary from that speed.

What Claranet will do

Inability to maintain the required speed: If the required speed is deemed to be unsupportable on a given line, the service will be deemed to be unavailable.

FTTC resilience

Your FTTC has a number of resilience configurations.

What Claranet will do

FTTC with Broadband backup: Ensure that your primary circuit will fail over to a backup service when the routing protocol is able to detect a line fault in the event that your Premises Equipment detects a line fault. Certain line faults are not detectable by the routing protocol and in such cases the primary circuit will not fail over to the backup service. Once the primary circuit has been re-established, traffic will move back onto the primary circuit.

The target fail over time is between 10 and 300 seconds. Your IP addresses which are routed on the primary circuit will be carried over to the backup service.

The features of this service include:

- FTTC and Broadband are delivered on different cable type between BT exchange and street cabinet
- No guaranteed diverse route
- Same local ducting
- Same serving exchange
- Different national carrier option

FTTC with Mobile Broadband backup: Ensure that your primary circuit will fail over to the Mobile Broadband backup service when the routing protocol is able to detect a line fault in the event that your Premises Equipment detects a line fault. Certain line faults are not detectable by the routing protocol and in such cases the primary circuit will not fail over to the 4G backup service. Once the primary circuit has been re-established, traffic will move back onto the primary circuit.

Target fail over time is between 10 and 180 seconds**.** IP addresses which are routed on the primary circuit will be carried over to the Mobile Broadband backup Service

The features of this service include:

- Different transmission medium
- Potentially the same serving exchange
- There is no guaranteed diverse route

Testing your FTTC backup service: Work with you to perform a failover test to your backup circuit once the circuit is installed. Claranet recommends that a failover test is performed of not less than one hour to establish a line rate on the FTTC circuit. When the initial line rate is being established there may be a period of intermittent availability where the circuit may synchronise frequently. If no test backup is performed, in the event of the first failover to the backup circuit, intermittent availability may be experienced while an initial line rate is established.

Testing your Mobile Broadband backup service: If you subscribe to the Mobile broadband backup Service, it is recommended a test failover is performed to ensure sufficient signal strength at that location. It is also recommended to retest if mobile broadband equipment it relocated.

What you will do

FTTC with Mobile Broadband backup: Take into account that the reduced bandwidth and performance of 4G when compared with FTTC when you are determining which type of traffic you pass across the service when it is running in resilience mode.

Testing your FTTC backup service: Once your FTTC circuit is live, it is your responsibility to periodically test your backup service.

For more information on the resilience options, please see **Appendix: Resilience**

FTTC care levels

Claranet provide three levels of care:

- Standard Care
- Business Care
  Offering an expedited faults process to resolve FTTC faults in a reduced time
- Enhanced Care
  Offering an extended supplier working hours and onsite engineers available 7 days a week

Table: FTTC care levels

Service	Standard Care	Business Care	Enhanced Care
Response time	1 Hour	1 hour	1 hour
Target fix time	48 working hours	24 working hours (2 Business days)	24 working hours (2 Business days)
Service Desk working hours	Operates during normal working hours 08:00-20:00	Operates during normal working hours 08:00-20:00	Operates during normal working hours 08:00–20:00
	Monday – Friday. We will endeavour to resolve an issue within 48 working hours from the fault being reported.	Monday - Friday. In addition we will endeavour to resolve an issue within 24 working hours of the fault being reported.	Monday - Sunday. In addition we will endeavour to resolve an issue within 24 working hours of the fault being reported.
Supplier engineer site visits	Monday-Friday 08:00 – 18:00 Excludes Bank Holidays	Monday-Friday 08:00 – 18:00 Excludes Bank Holidays	Monday- Sunday 08:00 - 20:00 Includes Regional & Bank Holidays
Supplier working hours	Monday – Friday 8:00-20:00	Monday – Friday 8:00-20:00	Monday – Sunday 24 x 7

Incompatible products and services

The FTTC service is not compatible with certain products and services including

- 30k loop;
- Private Circuits;
- ISDN – all types;
- Red ABC;
- RedCare ISDN;
- Meter Pulse Facility;
- PBX and AUX lines that do not terminate on an NTE5;
- Caller Redirect;
- Telecom Red – RedLine;
- Red Alert;
- FeatureNet;
- FeatureLine – Hunt Groups; and
- Light User Scheme.

Fibre to the Premises (FTTP)

Fibre to the Premises (FTTP) utilises fibre infrastructure between the serving exchange and the customer premises to deliver an asymmetrical broadband service. FTTP offers increased productivity and efficiency for businesses and is ideal for delivering fast broadband technology to remote offices and home workers.

FTTP will always deliver the stated bandwidths, unlike FTTC where the headline bandwidth is dependent on the distance between the end user premises and the serving cabinet. At present, Claranet offer 80/20 and 40/10 variants.

FTTP availability is limited to regions where there is BT SuperFast Fibre Access coverage and where BT have enabled the local exchange for FTTP services. Claranet will look to offer the service in fibre enabled areas where BT deployed FTTP rather than FTTC

What Claranet will do

Coverage and availability: Deliver a FTTP service where this is available. It should also be noted that FTTP coverage is not available in all areas of the UK at this time.

Options available

Table: FTTC options

Service	FTTP	Managed FTTP	Managed FTTP+ 4G Backup	FTTP + FTTP or Broadband Backup
Bandwidth Options – Download/Upload (Mbit/s)	80/20 40/10	80/20 40/10	80/20 40/10	80/20 40/10
Managed Router	No	Included	Included	Included
Download Limits	Fair Usage Policy			
Care Level Options	Standard	Standard Enhanced	Standard Enhanced	Standard Enhanced
Elevated Best Effort	Option	Option	Option	Option
Reporting Options		Claranet Online ClaraCare Vision	Claranet Online ClaraCare Vision	Claranet Online ClaraCare Vision

Line installation

What Claranet will do

Installation of a new line: Arrange for installation of the new service with our supplier into the customer premise.

What you will do

Installation of a new line: Provide a suitable location and power for Claranet to install the service.

Elevated Best Effort

Elevated Best Effort improves speed during the busiest times on the network. Elevated traffic is given preferential weighting within the Broadband Remote Access Server (BRAS) which gives a higher IP throughput under congestion during busy times. The weighting is applied to all traffic and does not distinguish between different traffic types e.g. VoIP and HTTP.

What Claranet will do

Upgrading to Elevated Best Effort: Issue a new 12 month minimum period contract if an FTTP circuit is upgraded to Elevated Best Effort after the initial installation.

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FTTP resilience

Your FTTP has a number of resilience configurations.

What Claranet will do

FTTP with Broadband backup: Ensure that your primary circuit will fail over to a backup service when the routing protocol is able to detect a line fault in the event that your Premises Equipment detects a line fault. Certain line faults are not detectable by the routing protocol and in such cases the primary circuit will not fail over to the backup service. Once the primary circuit has been re-established, traffic will move back onto the primary circuit.

The target fail over time is between 10 and 300 seconds. Your IP addresses which are routed on the primary circuit will be carried over to the backup service.

The features of this service include:

- FTTP and Broadband are delivered on different cable type between BT exchange and street cabinet
- No guaranteed diverse route
- Same local ducting
- Same serving exchange
- Different national carrier option

FTTP with Mobile Broadband backup: Ensure that your primary circuit will fail over to the Mobile Broadband backup service when the routing protocol is able to detect a line fault in the event that your Premises Equipment detects a line fault. Certain line faults are not detectable by the routing protocol and in such cases the primary circuit will not fail over to the 4G backup service. Once the primary circuit has been re-established, traffic will move back onto the primary circuit.

Target fail over time is between 10 and 180 seconds**.** IP addresses which are routed on the primary circuit will be carried over to the Mobile Broadband backup Service

The features of this service include:

- Different transmission medium
- Potentially the same serving exchange
- There is no guaranteed diverse route

Testing your FTTP backup service: Work with you to perform a failover test to your backup circuit once the circuit is installed. Claranet recommends that a failover test is performed of not less than one hour to establish a line rate on the

Testing your Mobile Broadband backup service: If you subscribe to the Mobile broadband backup Service, it is recommended a test failover is performed to ensure sufficient signal strength at that location. It is also recommended to retest if mobile broadband equipment it relocated.

What you will do

FTTP with Mobile Broadband backup: Take into account that the reduced bandwidth and performance of Mobile Broadband when compared with FTTP when you are determining which type of traffic you pass across the service when it is running in resilience mode.

Testing your FTTP backup service: Once your FTTP circuit is live, it is your responsibility to periodically test your backup service.

For more information on the resilience options, please see **Appendix: Resilience**

FTTP care levels

Claranet provide two levels of care:

- Standard Care
- Enhanced Care
  Offering an extended supplier working hours and onsite engineers available 7 days a week

Table: FTTP care levels

Service	Standard Care	Enhanced Care
Response time	1 Hour	1 hour
Target fix time	48 working hours	24 working hours (2 Business days)
Service Desk working hours	Operates during normal working hours 08:00-20:00 Monday – Friday. We will endeavour to resolve an issue within 48 working hours from the fault being reported.	Operates during normal working hours 08:00–20:00 Monday - Sunday. In addition we will endeavour to resolve an issue within 24 working hours of the fault being reported.
Supplier engineer site visits	Monday-Friday 08:00 – 18:00 Excludes Bank Holidays	Monday- Sunday 08:00 - 20:00 Includes Regional & Bank Holidays
Supplier working hours	Monday – Friday 8:00-20:00	Monday – Sunday 24 x 7

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Ethernet over Fibre to the Cabinet (EoFTTC)

Ethernet over Fibre to the Cabinet ("**EoFTTC**") is an Ethernet service that uses existing BT infrastructure - typically utilised in Fibre To The Cabinet broadband services ("**FTTC**") - for the last mile of the circuit (similar to how Ethernet First Mile utilises the copper network for the last mile). EoFTTC allows the delivery of circuits with up to 20Mbit/s of symmetrical bandwidth and as an Ethernet service, bandwidth is guaranteed and uncontended.

Options available

Table: Summary of EoFTTC line installation parameters

Service	20 Mbit/s Fixed Rate Service	20 Mbit/s Burstable Service
Description	Ethernet delivered over existing FTTC infrastructure.	
Site availability	99.5%	
Bandwidth options	1Mbit/s - 20Mbit/s[1] symmetrical	1Mbit/s – 20Mbit/s[1] symmetrical, burstable to 80Mbit/s[1] downstream
Onsite engineer Router Installation	Option with Managed Cisco Router	
Up/Down monitored by Claranet	Yes	
Download limits	Unlimited	
Reporting Options	Claranet Online and ClaraCare Vision	

1. Maximum bandwidth available will be determined by the distance from the serving street cabinet (PCP).

Line installation and lead times

The EoFTTC service requires an active analogue BT (PSTN) line.

What Claranet will do

Installation of a new PSTN line: Install a new PSTN line as an additional service when needed, to deliver the EoFTTC service. Claranet retains ownership of this new line. The installation lead time for a new PSTN line is between 15-30 working days. When taking a PSTN line for this service with Claranet, it is recommend that Service Maintenance Level 4 is ordered against the PSTN to minimise the impact of any faults that may affect the PSTN circuit.

Use of an existing PSTN line: Use an existing PSTN line to provide your 20 Mbit/s Fixed Rate EoFTTC service where this is required and available. Your EoFTTC service shares the line with the existing PSTN.

Migration path: There is currently no migration path to EoFTTC from Broadband/FTTC services. If EoFTTC is to be provisioned at a site that currently has an FTTC or Broadband service, there are two options:

- Claranet install a new PSTN line for the EoFTTC; or
- The existing FTTC/Broadband circuit is ceased and the EoFTTC order placed on the existing PSTN. This would mean that there would be a loss of connectivity for the time between the cease of the existing FTTC/Broadband and the provision of the EoFTTC circuit.

Location moves: Install a new EoFTTC circuit into the new location. It is not possible to move an EoFTTC circuit to another location e.g. to a new office location. The new circuit will be subject to a new twelve month minimum period and existing contract terms on the original EoFTTC circuit must be taken into consideration if a move is required.

Internal shift of EoFTTC: An internal shift for EoFTTC is only applicable if it is the physical copper entry ports used for the EoFTTC circuit and the Network Terminating Equipment (NTE) are moving internally within a building. e.g. from the third floor to the basement.

Lead times: Provide a target installation date once a site survey has been carried out as a result of the order being placed. Claranet uses third parties National Ethernet Services to provide EoFTTC connectivity. The service should still be viewed by you as being delivered in its entirety by Claranet and any representatives of these third party companies should be viewed as being contracted to and working for Claranet for the purposes of delivering your EoFTTC circuit.

Lead time 20 Mbit/s Fixed Rate EoFTTC: The lead time for the 20 Mbit/s Fixed Rate service is 20 working days.

Lead time for 20 Mbit/s Burstable EoFTTC: The lead time for the 20 Mbit/s Burstable service is 30 working days.

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Speed and Bandwidth

What Claranet will do

Available speed: Deliver 20Mbit/s services as standard where coverage exists. Due to the underlying technology employed, the maximum bandwidth of 20Mbit/s may not be achievable and occasionally it may not be possible to provide the Service altogether. Speeds achieved will vary dependent on distance from the serving street cabinet (PCP) as well as the line length, line condition, end-user wiring and your premises equipment.

Fixed Bandwidth: Provides EoFTTC with a fixed dedicated, uncontended bandwidth of up to 20Mbit/s. The further the distance between the premises and the serving street cabinet, the lower the headline bandwidth will be. There are **NO** available options to increase or decrease the bandwidth on the EoFTTC service once it has been determined.

Underlying failure of the PSTN line: Not factor into the availability/uptime availability of the EoFTTC circuit any fault or downtime where the underlying cause is found to be the PSTN line rather than the EoFTTC circuit. In the event that this is the case, no compensation will be paid under the service levels parameters. To minimise potential downtime due to PSTN faults, it is advised that you ensure that you are aware of the service level that you have on the PSTN line. Please refer to the Claranet PSTN Service Description for details of the Service Levels available.

EoFTTC line configuration

Table: EoFTTC line configuration parameters

Service	20 Mbit/s Fixed Rate Service	20 Mbit/s Burstable Service
Access speed	Ethernet delivered over existing FTTC infrastructure. Bandwidth will be offered at the speed available for the specific location.	
Standard NTE interface [1]	BS 6312	RJ45
Alternative NTE interface [1]	RJ11	-

[1] Ethernet over FTTC will require a VDSL compatible microfilter to connect into the NTE, which will result in an RJ11 presentation. Some NTEs have built in filters and have both BS6312 and RJ11 sockets. In these instances, the RJ11 socket should be used.

Rate Adaption

Your EoTTC service will rate adapt to the highest stable speed possible up to 20 Mbit/s.

What Claranet will do

Rate adaption and initial fluctuation: Rate adapt your EoFTTC service to the highest stable speed possible up to a maximum of 20Mbit/s. The maximum line rate is calculated over a 4 day period. The period starts during the last 4 days of installation, as long as a configured CPE router is connected. Once this 4 day period is complete the circuit will be classed as “in-life”.

Rate adaption without a router installed: If a router is not installed and powered on 4 days prior to the circuit completion date, the circuit will need to undergo the 4 day training period before the circuit determines its maximum line rate. During this time the service speed may fluctuate as it determines what speed the line can support.

EoFTTC resilience

Your EoFTTC has a number of resilience configurations.

What Claranet will do

EoFTTC with FTTC or Broadband backup: Ensure that your primary circuit will fail over to a backup service when the routing protocol is able to detect a line fault in the event that your Premises Equipment detects a line fault. Certain line faults are not detectable by the routing protocol and in such cases the primary circuit will not fail over to the backup service. Once the primary circuit has been re-established, traffic will move back onto the primary circuit.

The target fail over time is between 10 and 300 seconds. Your IP addresses which are routed on the primary circuit will be carried over to the backup service.

The features of this service include:

- Same backhaul network
- Same local ducting
- No guaranteed diverse route
- Same service exchange
- Protect against Claranet PoP failures

FTTC with Mobile Broadband backup: Ensure that your primary circuit will fail over to a Mobile Broadband backup service when the routing protocol is able to detect a line fault in the event that your Premises Equipment detects a line fault. Certain line faults are not detectable by the routing protocol and in such cases the primary circuit will not fail over to the Mobile Broadband backup service. Once the primary circuit has been re-established, traffic will move back onto the primary circuit.

Target fail over time is between 10 and 180 seconds**.** IP addresses which are routed on the primary circuit will be carried over to the Mobile Broadband backup service

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If taking EoFTTC with Mobile Broadband Backup only, then only Cisco router options are supported.

Testing your FTTC backup service: Work with you to perform a failover test to your backup circuit once the circuit is installed. Claranet recommends that a failover test is performed of not less than one hour to establish a line rate on the FTTC circuit. When the initial line rate is being established there may be a period of intermittent availability where the circuit may synchronise frequently. If no test backup is performed, in the event of the first failover to the backup circuit, intermittent availability may be experienced while an initial line rate is established.

Testing your Mobile Broadband backup service: If you subscribe to the Mobile broadband backup Service, it is recommended a test failover is performed to ensure sufficient signal strength at that location. It is also recommended to retest if mobile broadband equipment it relocated.

What you will do

EoFTTC with Mobile Broadband backup: Take into account that the reduced bandwidth and performance of Mobile Broadband when compared with FTTC when you are determining which type of traffic you pass across the service when it is running in resilience mode.

Testing your FTTC backup service: Once your FTTC circuit is live, it is your responsibility to periodically test your backup service.

Routers

In order to use EoFTTC services a compatible router is required.

What Claranet will do

Provision of a router: Provide a compatible Cisco router where required.

What you will do

Provision of your own Openreach MCT approved router: Ensure that any router you supply is a BT Openreach MCT approved router. Openreach MCT (Modem Conformance Testing) is a process whereby BT Openreach validate that any non-Openreach provided modems or routers connecting to Openreach network do not cause their network harm which would impact other users of the network. It also validates that the parameters being fed by the device into the Openreach network are correct. Full details of MCT can be found in SIN (Suppliers' Information Notes) 498 available from BT.

Provision of your own NON MCT approved router: If a non-MCT approved router is requested to be used, it may lead to delays with fault resolution with Openreach as well as resulting in charges from BT and voiding the availability SLA on the circuit.

Micro-filters

In addition to a compatible router, a VDSL compatible microfilter will need to be installed between the NTE and the router.

What Claranet will do

Provision of a VDSL microfilter: Provide a VDSL microfilter with any router supplied by Claranet, where applicable.

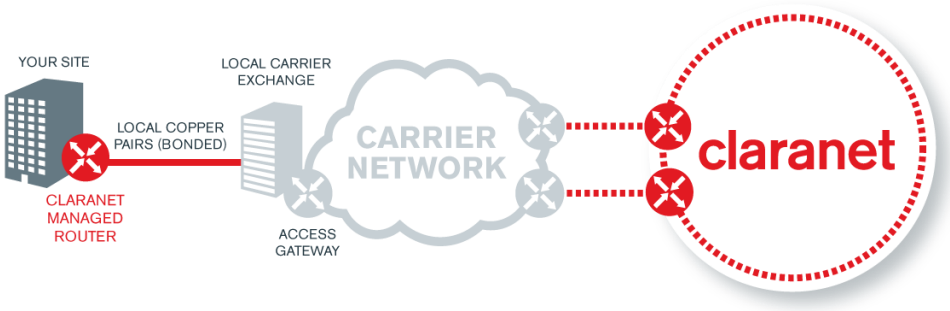
Incompatible products and services

The EoFTTC service is not compatible with certain products and services including

- 30k loop;
- Private Circuits;
- ISDN – all types;
- Red ABC;
- RedCare ISDN;
- Meter Pulse Facility;
- PBX and AUX lines that do not terminate on an NTE5;
- Caller Redirect;
- Telecom Red – RedLine;
- Red Alert;
- FeatureNet;
- FeatureLine – Hunt Groups; and
- Light User Scheme.

Ethernet First Mile (EFM)

Ethernet First Mile is an Ethernet Service provided over multiple bonded copper pairs (maximum 8). The bandwidth available is dependent on the distance from the local BT serving exchange (maximum 4.8km) and the number of spare copper pairs available to your premise. Ethernet First Mile offers connectivity between your site and Claranet, offering bandwidths options up to 35Mbit/s. Due to the underlying technology employed and the number of copper pairs available the maximum bandwidth of 35Mbit/s may not be achievable and occasionally it may not be possible to provide the service altogether.



Claranet provides a Managed Cisco Router with installation by an onsite engineer. The service itself is complimented by Ethernet level service level agreements.

Options available

There are two versions: Ethernet First Mile and Ethernet First Mile Lite.

Table: Ethernet First Mile Lite and Ethernet First Mile installation parameters

Service	Ethernet First Mile Lite	Ethernet First Mile
Description	Ethernet First Mile Lite delivered over 4 copper pairs. Bandwidth will be offered at the speed available for the specific location	Ethernet First Mile delivered over 2 to 8 copper pairs. Bandwidth can be requested up to the maximum available at the specific location. Bandwidth may be set at a lower rate to the Circuit size to allow for bandwidth upgrades in the future.
Site Availability	99%	99.5%
Bandwidth Options	1Mbit/s - 20Mbit/s[1]	1Mbit/s - 35Mbit/s[1]
Backup options	EFM, EoFTTC, Leased Line, FTTC, ADSL, Mobile Broadband	
Onsite engineer Router Installation	Included with Managed Cisco Router	
Up/Down monitored by Claranet	Yes	
Download limits	Unlimited	
Reporting Options	Claranet Online ClaraCare Vision	

[1] Maximum bandwidth available will be determined by the distance from the local serving exchange, number of copper pairs available and quality of the copper

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Line installation and lead times

What Claranet will do

Installation date: Provide a target installation date once a site survey has been carried out as a result of the order being placed.

Ethernet First Mile Lite lead time: Install a new line with a 50-95 working days lead time.

Ethernet First Mile lead time: Install a new line with a 30 working days lead time.

3rd parties: Claranet uses third parties National Ethernet Services to provide EFM connectivity. The service should still be viewed by you as being delivered in its entirety by Claranet and any representatives of these third party companies should be viewed as being contracted to and working for Claranet for the purposes of delivering your EFM circuit.

Location moves: Install a new EFM circuit to your location. It is not possible to move an EFM circuit to another location e.g. to a new office location. The new circuit will be subject to a new twelve month minimum period and existing contract terms on the original EFM circuit must be taken into consideration if a move is required.

Internal shift of EFM: An internal shift for EFM is only applicable if it is the physical copper entry ports used for the EFM circuit and the Network Terminating Equipment (NTE) are moving internally within a building. e.g. from the third floor to the basement.

Bandwidth changes

What Claranet will do

Bandwidth upgrades for EFM: Provide an upgrade providing that a higher capacity bearer has been installed. Where the bandwidth and bearer size are of equal capacity, a bandwidth upgrade may only be provided via a cease and re-provide. Upon completion of the bandwidth change a new twelve month minimum period will take effect.

Bandwidth upgrades for EFM Lite: Ethernet First Mile Lite Services are provided via a fixed number of copper pairs; therefore a bandwidth upgrade is **not** possible as there is no option to add additional copper pairs to this service to increase the bandwidth.

EFM line configuration

Table: EFM line configuration parameters

Service	Ethernet First Mile parameters
Access speed	2-35 Mbit/s
Standard NTE interface [1]	RJ45 Fast Ethernet

EFM resilience

Your EFM circuit has a number of resilience configurations.

What Claranet will do

EFM with FTTC or Broadband backup: Ensure that your primary circuit will fail over to a FTTC or Broadband backup service when the routing protocol is able to detect a line fault. Certain line faults are not detectable by the routing protocol and in such cases the primary Ethernet circuit will not fail over to the backup FTTC or Broadband circuit. Once the session has been re-established, traffic will move back onto the primary circuit.

The target fail over time is between 30 and 180 seconds. Your IP addresses which are routed on the Ethernet circuit will be carried over to the FTTC or Broadband backup. A maximum of six IP subnet ranges from the Ethernet circuit may be routed over onto the FTTC or Broadband backup circuit.

The features of this service include:

- Different backhaul network
- Same local ducting
- No guaranteed diverse route
- Same serving exchange
- Protect against Claranet PoP failures

EFM with Ethernet backup: Ensure that your primary circuit will fail over to an Ethernet backup service when the routing protocol is able to detect a line fault. Certain line faults are not detectable by the routing protocol and in such cases the primary Ethernet circuit will not fail over to the backup. Once the primary circuit has been re-established, traffic will move back onto the primary circuit.

The target fail over time is between 10 and 180 seconds. Your IP addresses which are routed on the Ethernet circuit will be carried over to the backup.

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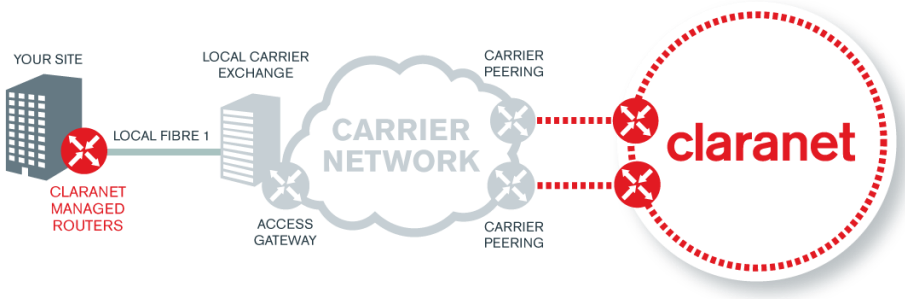
The features of this service include:

- Same backhaul network
- Same local ducting
- No guaranteed diverse route
- Same service exchange
- Protect against Claranet PoP failures

Ethernet

An Ethernet Service provides a high-speed point-to-point circuit between your site and Claranet, offering scalable bandwidths from 2Mbit/s to 10GbE delivered over fibre. Ethernet services are offered at access speeds of 10Mb, 100Mb, and 1Gb, bandwidths range from 2Mbit/s through to 1Gbit/s. Up to 10GbE Ethernet access services are also available.



What Claranet will do

Availability: Provide Ethernet services across the UK and Northern Ireland, though non UK Ethernet circuits are also available. For more information, please refer to the International Leased Line.

Range of options: Provide a range of Ethernet services from single circuits through to high availability solutions.

High availability: For High Availability solutions, please see the Ethernet Separation service information below

Installation of a Managed Router: Provide an engineer onsite for all Ethernet services which include a managed router.

Options available

Table: Ethernet installation parameters

Service	Ethernet single connection	Ethernet resilience options			
		Ethernet with backup	Separation	Separation Plus	Separation Dual site
Description	Single Ethernet with no resilience	Cost effective option providing limited separacy backup option	Separately routed where possible, single entry point into building.	Two separately routed fibres end to end	Two separately routed fibres end to end into two locations
Site Availability	99.5%	99.9%	99.95%	99.99%	99.9%
Backup circuit options	N/A	Ethernet EFM EoFTTC FTTC Broadband Mobile Broadband	Ethernet	Ethernet	Ethernet
Bandwidth Options (Mbit/s)	2Mbit/s - 1GbE				
Onsite engineer Router Installation	Included with managed Cisco router				
Up/Down status monitored by Claranet	Yes				
Download limits	Unlimited				
Reporting options	ClaraCare Vision				

Bandwidth options

What Claranet will do

Tiering to a lower bandwidth: Tier your service to a lower bandwidth which will allow for an easier upgrade path in the future; for example a 100Mb Ethernet access may be installed with 20Mbit/s of bandwidth. This then allows for the bandwidth to be upgraded at a future date without the need to upgrade the access circuit itself.

Services greater than 1GbE: Design these circuits as per your requirements.

Limits due to underlying technology: Apply any limits imposed by the underlying technology, e.g. 100Mbit/s Ethernet rates may be limited to a maximum of 97Mbit/s.

Table: Ethernet bandwidth options

Bandwidth	10 Mbit/s access	100 Mbit/s access	1000 Mbit/s access
2 Mb	●	●	
4 Mb	●	●	
6 Mb	●	●	
8 Mb	●	●	
10 Mb	●	●	
15 Mb		●	
20 Mb		●	
25 Mb		●	
30 Mb		●	
40 Mb		●	
50 MB		●	
60 Mb		●	
70 Mb		●	
80 Mb		●	
90 Mb		●	
100 Mb		●	●
150 Mb			●
200 Mb			●
250 Mb			●
300 Mb			●
350 Mb			●
400 MB			●
450 Mb			●
500 Mb			●
1000 Mb			●

Note: The 10 Mbit/s access is subject to availability.

Bandwidth changes

What Claranet will do

Change requests: Regrade the bandwidth of a tiered Ethernet service within the maximum access circuit bandwidth as per your request subject to the following limitations:

- Upgraded once per calendar month
- Downgraded to the original contract bandwidth – once in any twelve month period
- Upon the completion of the re-grade of the bandwidth of a tiered Ethernet Service a 1 month minimum period shall apply

Upgrades where sufficient capacity exists: If sufficient capacity exists on the access speed, the bandwidth can usually be upgraded within 10 working days, subject to confirmation on a case-by-case basis.

Lead time for changes: Changes to the access speed will usually have a 30-90 working day lead time, also subject to confirmation on a case-by case basis.

Line installation and lead times

What Claranet will do

Installation date: Provide a target installation date once a site survey has been carried out as a result of the order being placed. Wayleave or additional engineering work will be identified which may extend the delivery lead time.

3rd parties: Claranet uses third parties National Ethernet Services to provide EFM connectivity. The service should still be viewed by you as being delivered in its entirety by Claranet and any representatives of these third party companies should be viewed as being contracted to and working for Claranet for the purposes of delivering your EFM circuit.

Lead times: Install a new line with a 70-90 working days lead time.

Shorter lead times: Assess any requests for a shorter lead time on a case by case basis. You must make your request prior to placing your order. Claranet cannot guarantee that a shorter lead time being available can be given.

Location moves: Evaluate all Ethernet moves on a case by case basis as the ability to move an Ethernet circuit is determined by different factors such as third party supplier and existing contract terms. A new Ethernet circuit may be required in the new location which will be subject to a new 12 month minimum period or as otherwise set out in the contract.

Transfer of contracts: Evaluate any request to transfer your existing service (whether from other suppliers to Claranet or from Claranet to other suppliers) on a case-by-case basis and it will require the active support and authorisation of all three parties (Claranet, yourself and the other supplier). Any agreement by Claranet to transfer or accept transfer of a given circuit should not be taken as confirmation that any other services can or will be transferred.

What you will do

Wayleave agreement: Obtain the Wayleave agreement if required.

Excess Construction Charges: Obtain any excess construction charges agreement that may be necessary.

Ethernet line configuration

For Ethernet Services RJ45 interfaces are provided as standard where possible. For Ethernet 1000Mbit/s circuits Dual LC interfaces will be provided as standard, in some instances RJ45 may be provided.

Table: Ethernet line configuration parameters

Service	10 Mbit/s access	100 Mbit/s access	1000 Mbit/s access
Standard NTE interface [1]	RJ45 Fast Ethernet	RJ45 Fast Ethernet	Dual LC
Alternative NTE interface	-	-	RJ45 Gigabit Ethernet[1]

[1] Some third party suppliers will present RJ45 on 1000Mbit/s circuits.

Ethernet resilience

Your Ethernet circuit has a number of resilience configurations.

What Claranet will do

Ethernet with FTTC or Broadband backup: Ensure that your primary circuit will fail over to a FTTC or Broadband backup service when the routing protocol is able to detect a line fault. Certain line faults are not detectable by the routing protocol and in such cases the primary Ethernet circuit will not fail over to the backup FTTC or Broadband circuit. Once the session has been re-established, traffic will move back onto the primary circuit.

The target fail over time is between 30 and 180 seconds. Your IP addresses which are routed on the Ethernet circuit will be carried over to the FTTC or Broadband backup. A maximum of six IP subnet ranges from the Ethernet circuit may be routed over onto the FTTC or Broadband backup circuit.

The features of this service include:

- Different backhaul network
- Different access technologies
- Same local ducting
- No guaranteed diverse route
- Same serving exchange
- Protect against Claranet PoP failures

Ethernet with Ethernet backup: Ensure that your primary circuit will fail over to an Ethernet backup service when the routing protocol is able to detect a line fault. Certain line faults are not detectable by the routing protocol and in such cases the primary Ethernet circuit will not fail over to the backup. Once the primary circuit has been re-established, traffic will move back onto the primary circuit.

The target fail over time is between 10 and 180 seconds. Your IP addresses which are routed on the Ethernet circuit will be carried over to the backup.

Ethernet Separation

Ethernet Separation Services form a key part of Claranet's portfolio for Next Generation Services. Ethernet Separation services offers market leading capability in providing resilient Ethernet options ranging from a simple backup service through to fully separated Ethernet circuits for high availability applications. Ethernet Separation services are available on Claranet MPLS solutions and Internet connectivity solutions.

Options available

Details of the Ethernet Separation service options can be seen in the table below.

Table: Ethernet Separation options

Service option	Ethernet Backup - Single Fibre	Separation	Separation Plus	Separation Plus - Dual site
Summary Description	Cost effective option that provides limited separacy backup option	Separately routed where possible, single entry point into building	Two separately routed fibres end to end	Two separately routed fibres end to end into two building locations
Site Availability	99.9%	99.95%	99.99%	99.9%
Backup circuit options	Ethernet	Ethernet	Ethernet	Ethernet
Up/Down status monitored by Claranet	Yes	Yes	Yes	Yes
Download limits	Unlimited	Unlimited	Unlimited	Unlimited

Details of the resilience options for the Ethernet Separation service can be seen in the table below.

Table: Ethernet Separation resilience options

Resilience option	Ethernet Backup - Single Fibre	Separation	Separation Plus	Separation Plus - Dual site
Single NTE	●			
Single Transmission Device	●			
Single Fibre to building	●			
Single Building Entry Point	●	●		
Common Cable Route	●	●		
Common Access Point	●	●		
Common Core Nodes	●			
Dual NTE		●	●	●1
Dual Transmission Device		●	●	●2
Dual Fibre to building		●	●	●3
Separate Building Entry Points			●	●4
Separate Cable Route			●	●
Separate Core Nodes		●5	●	●
Separate Core Network Routing			●	●

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Resilience option	Backup single fibre	Separation	Separation Plus	Separation Plus - Dual site
Separate Claranet PoPs	●	●	●	●
Dual CPE Routers	●	●	●	●
Delivered as Active/ Passive	●	●	●	
Delivered as Active/ Active				●

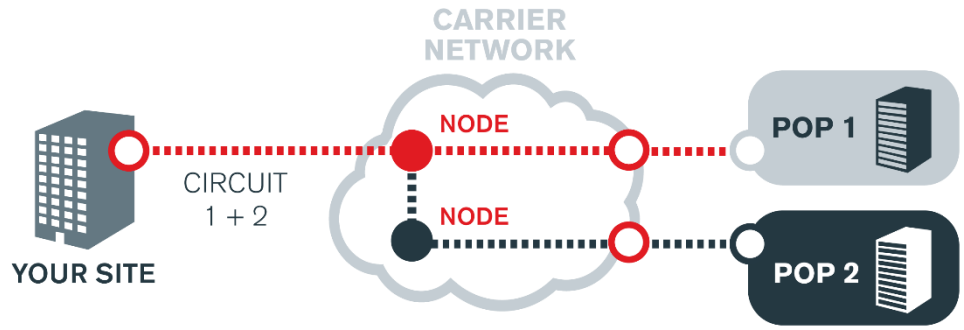
1. One NTE in each building
2. One transmission device in each building
3. One fibre to each building
4. One building entry point into each building
5. Best Effort separation

Ethernet Backup – Single Fibre

Backup Single Fibre is the introductory level for resilience Ethernet Services. Both circuits are delivered over a single fibre to your site. This option is if you require a backup option with no separation on the access connection to your site. This solution is recommended if you require an introductory level of resilience.

Each virtual circuit is routed over the same local fibre but may be delivered to two Claranet PoPs. The total bandwidth of both virtual circuits must not exceed the size of the Ethernet access circuit.

Diagram: Ethernet Backup – Single Fibre

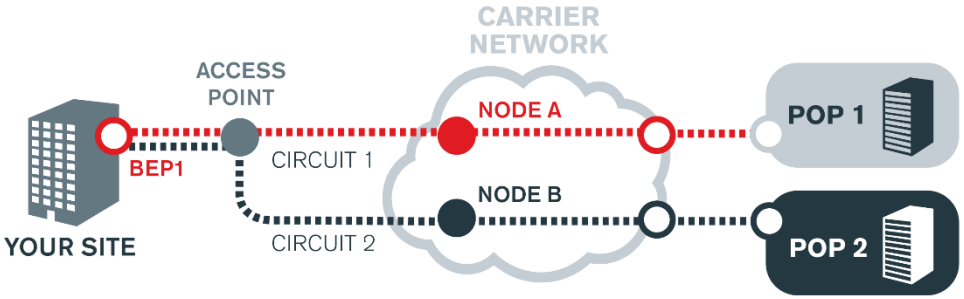


Ethernet Separation

Separation offers dual fibres into the building through a single building entry point. This option may be used when full separation is not required or geographic or telecom constraints limit the availability of the Separation Plus option. This option would be recommended if you do not require two building entry points.

Each circuit is separated as much as possible until a single pinch point is reached

Diagram: Ethernet Separation



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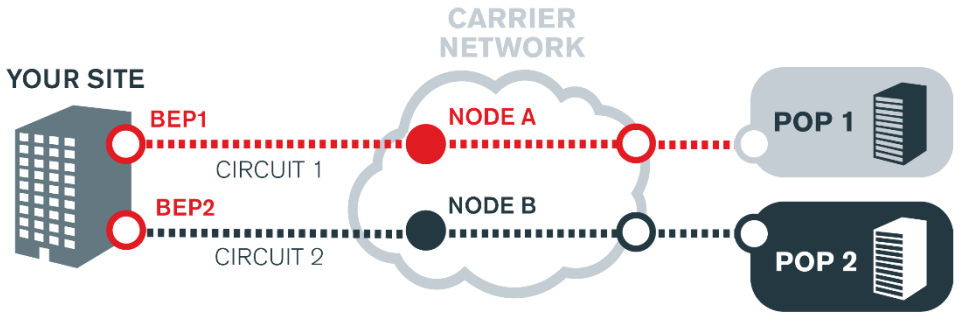
Ethernet Separation Plus

Separation Plus offers dual fibres into the building through dual building entry points. This option may be used when full separation is required. This option would be recommended if you require two building entry points and complete separation of circuits for high availability applications. Each solution is designed individually and if any pinch points (common infrastructure or fibre routes) are identified due to limitations in local telecoms infrastructure, you will be notified of this. Extended lead times on the secondary circuit may be experienced due to extended routes or way-leave restrictions.

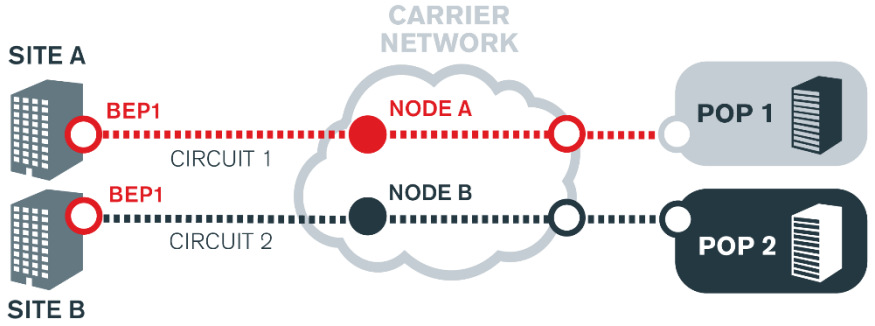
Diagram: Ethernet Separation Plus



Ethernet Separation Plus – Dual Site

Ethernet Separation Plus – Dual Site offers separate fibres into two buildings which may be located within the same proximity of each other. This option may be used when full separation is required between the two buildings. This option would be recommended if you require solutions such as triangulation between Claranet and your two sites for a high resilience application. Geographic or telecom constraints may limit the availability of this option.

Diagram: Ethernet Separation Plus – Dual Site



Separation Plus Dual site - Solution configuration

Separation Plus Dual site offers two separate routed Ethernet circuits in an active/active configuration to two separate buildings. The solution may be used in any scenario where common routing or equipment is to be avoided. There is no geographical constraint to the service however the solution is most suitable when buildings are within close proximity of each other.

This solution does not offer failover from one circuit to another unless provided in conjunction with triangulation solution which provides resilience between Claranet and two of your sites which are connected by a point-to-point circuit.

What Claranet will do

Failover: Ensure that a circuit will fail over to a secondary Ethernet circuit when the routing protocol is able to detect a line fault in the event that BGP session fails due to a line fault. Certain line faults are not detectable by the routing protocol and in such cases the primary Ethernet circuit will not fail over to the backup circuit. Failover does not occur instantaneously, the target fail over time is between 30 and 180 seconds.

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Line installation and lead times

Additional planning and feasibility studies are required to deliver the Ethernet Separation services. Core network routing and local access to your sites need to be planned fully on an individual basis.

Table: Ethernet Separation Lead times

Service type	New line lead times
Ethernet Separation	75 – 90 working days for the primary circuit Lead time on the secondary circuit will be dependent on any potential Way Leave restrictions or additional engineering

Bandwidth selection

It is recommended the bandwidth on both the primary and secondary circuits is equivalent to ensure that in a failover scenario all applications continue to function. If a lower bandwidth is selected on the secondary circuit to that of the primary circuit, in the event of a failover the performance is impacted. In this case, the Service Levels do not apply to performance degradation caused by insufficient bandwidth.

Managed Router

Installation

A standard component involves the installation of a Managed Router and Claranet will provide onsite engineering support for this.

What Claranet will do

Provision of a router: Provide a configured router and make changes to the configuration as required to ensure the continued running of the Service.

Router installation for Ethernet and EFM: Provide an onsite engineer as standard when a Claranet Cisco router is provided.

Router installation for EoFTTC, FTTC and Broadband: Ship a router to site. A managed installation by an engineer can be selected at an additional cost.

Login details and passwords: Maintain control of the login accounts to the router. In the event of an emergency where Claranet cannot connect to the router you may be permitted access to the router through the use of an emergency password. In normal operation you will not be have access to the router.

Security features: Supply the router with the recommended security features included within the IOS at that time while ensuring the router is practical to use.

IOS software: Supply the Cisco router with the appropriate IOS software available at that time.

Ownership: Retain ownership of the router.

What you will do

Provision of your own Broadband Router/Modem: If you provide your own Broadband router/modem you must ensure that they are compatible with ADSL/VDSL standards:

- ADSL ITU-T G.992.1; and
- ADSL 2+ITU-T G.992.5
- VDSL ITU-T G.993.2

VDSL -When using the 20 Mbit/s Fixed Rate EoFTTC service a compatible router is required. Claranet are able to provide a compatible Cisco router where required, however if you are not using a Claranet supplied router it is recommended that you ensure that a BT Openreach MCT approved router is used. If a non MCT approved router is used it may lead to delays with fault resolution with Openreach as well as resulting in charges from BT and voiding the availability SLA on the circuit.

Openreach MCT (Modem Conformance Testing) is a process whereby BT Openreach validate that any non-Openreach provided modems or routers connecting to Openreach network do not cause their network harm which would impact other users of the network. It also validates that the parameters being fed by the device into the Openreach network are correct.

Full details of MCT can be found in SIN (Suppliers' Information Notes) 498 available from BT

Requesting a managed installation by an engineer if needed: Request that an engineer is available on site for the installation of a managed router for EoFTTC, FTTC or Broadband services if needed, where the router is shipped to you as standard, prior to the order being completed.

Managed Router installation by an onsite engineer

What Claranet will do

General scope: .Provide an engineer onsite who will install the router and connect it to the Claranet Ethernet line. If necessary the engineer will, if requested, migrate the existing service over to Claranet. This will include connecting the service to your LAN. The Managed Router installation service is part of the initial line implementation only, and includes **one** visit to your premises and must be on Claranet provided equipment.

Additional on-site visits: Provide further engineering and installation visits to your site at an additional cost. e.g. for location or line moves.

Installation hours: Provide installations within the hours of 09:00 – 17:00 Monday to Friday (excluding Public Holidays).

Out of hours installations: Provide out of hours installation at an additional cost.

Areas covered by the installation service: Cover areas on mainland UK only. In addition, areas of exclusions due to travel time are highlands of Scotland, Cornwall, West Wales and Cumbria. For areas outside mainland UK, an additional charge applies.

What you will do

Connecting your router when migrating your service to Claranet at a later date: It remains your responsibility to connect the Claranet router to your LAN if you select to migrate from your existing service to Claranet at another time.

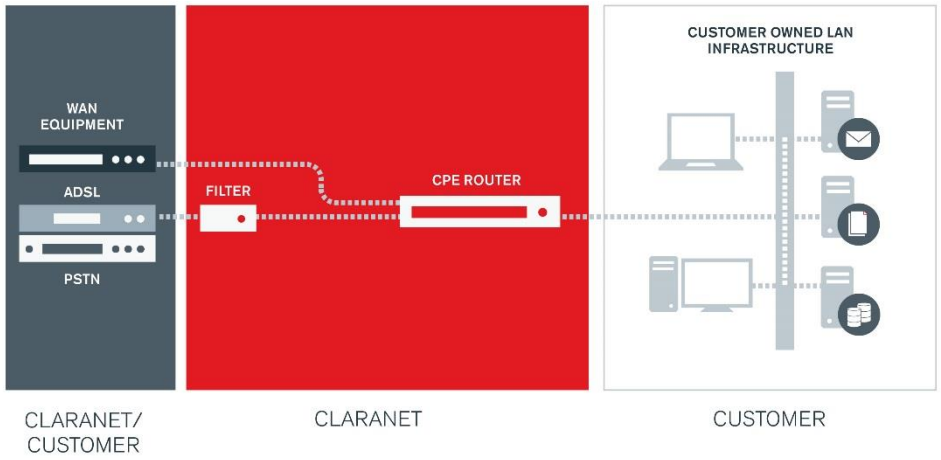
Preparing your site for installation: Prepare your site for installation of the router. Additional work to enable installation of the router is not included and it is your responsibility to ensure there is enough space within the rack, to remove old equipment and that there is enough power.

Table: Connectivity services and onsite engineer options for Cisco managed router installation

Connectivity Service	Options available
Ethernet	Onsite engineer as standard
Ethernet First Mile	Onsite engineer as standard
Ethernet First Mile Lite	Onsite engineer as standard
Ethernet over FTTC	Optional and available at additional cost
Fibre to the Cabinet	Optional and available at additional cost
Broadband	Optional and available at additional cost
Customer provided router	Not available

Installation areas of responsibility

Areas of responsibility during the installation of the router



The boxes in the left hand area of the diagram illustrate an area that may be covered by either Claranet or you. You will retain ownership of any services provided by you. This does not define responsibility areas for maintenance or ongoing management.

Table: Demarcation during engineer installation

Item	Who provides	Who connects
Cables from WAN equipment to Claranet router (X.21, RJ-45, BNC)	Claranet	Claranet
Cables between Micro filter and Claranet router	Claranet	Claranet
Cables between NTE/PSTN when Claranet router supplied	Claranet	Claranet
Micro filter	Claranet	Claranet
G.703 Protocol convertor	Claranet	Claranet
Cables from Claranet router to Customer LAN (During installation)	Claranet	Claranet (if requested)
Cables between NTE/PSTN when Customer router supplied	Customer	Customer
Cables from Claranet router to Customer LAN (If connected after initial installation)	Customer	Customer

What Claranet will do

Additional tasks: Perform additional tasks outside those described. There is an additional charge for the engineering time incurred to perform these tasks. Any requirements in addition to those agreed in the order may be able to be fulfilled; however, this will also have an impact on the implementation time frame. Claranet reserves the right to charge on a time and materials basis for any additional work.

Managed Router maintenance

The Managed Router maintenance offers a break/ fix Service on Claranet provided Cisco routers on Ethernet, Ethernet First Mile, EoFTTC, FTTC and Broadband. In the case of a hardware failure on a Claranet router as deemed by a Claranet engineer, Claranet will replace the router as per the Service Levels. Please see the relevant Service Description relating to the service purchased.

Areas of responsibility for break/fix demarcation of the Managed Router

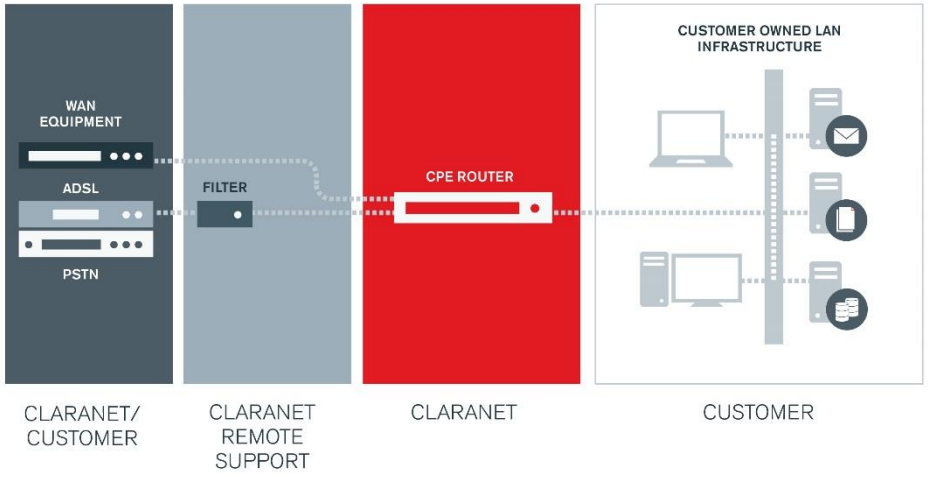


Table: Demarcation for In-Life break/fix

Item	Who replaces	Who connects
Claranet router hardware break/ fix – engineer site visit	Claranet	Claranet
Break/ fix G.703 Protocol convertor	Claranet[1]	Customer
X.21,BNC and fibre cables from WAN equipment to Claranet router	Claranet[1]	Customer

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Ethernet (RJ-45) cables from WAN equipment to Claranet router	Claranet[1]	Customer
DSL Micro filter	Claranet[1]	Customer
Cables between WAN equipment and Customer provided router	Customer	Customer
Cables between Claranet provided router and Customer LAN	Customer	Customer
Configuration, maintenance and replacement of Customer owned routers	Customer	Customer
External router power supply	Claranet	Customer
Power kettle lead	Customer	Customer

1. *Items are not covered by 5 hour fix, shipped for next working day*

Additional areas of responsibility

What Claranet will do

Fault diagnosis: Diagnose faults on Claranet supplied routers.

Router replacement when supplied by Claranet: Replace the router in case of failure, in accordance with the Service Levels and the areas described in Appendix: Help and Support.

Monitoring of Ethernet line: Monitor the Ethernet line when a Claranet router is supplied.

What you will do

Router replacement when supplied by you: Replace the router in case of failure when supplied by you.

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Table: Summary of connectivity elements and components

Component	Mobile Broadband	Broadband	FTTC	FTTP	EoFTTC	EFM Lite	EFM	Ethernet
Delivery								
Delivery method	Air	Copper	Fibre and Copper	Fibre	Fibre and Copper	Copper	Copper	Fibre
PSTN Lead times		15-30 days	15-30 days		15-30 days			
Lead times (working days)	5-10 days	7-10 days	20 days	20 days	20 days	50-95 days	30 days	70-90 days
Bandwidth and speed								
Download speed (max)		20 Mbit/s	80 Mbit/s	80 Mbit/s	20 Mbit/s	20 Mbit/s	35 Mbit/s	1/10 Gbit/s
Upload speed (max)		1 Mbit/s 448 Kbit/s [1]	20 Mbit/s	20 Mbit/s	20 Mbit/s	10 Mbit/s	35 Mbit/s	1/10 Gbit/s
Symmetric bandwidth		No	No	No	Yes	Yes	Yes	Yes
Guaranteed bandwidth		No	No	No	Yes	Yes	Yes	Yes
Dedicated bandwidth		No	No	No	Yes	Yes	Yes	Yes
Download limits		Fair usage	Fair usage	Fair usage	Unlimited	Unlimited	Unlimited	Unlimited
Annex M		Option [2]						
Elevated Best Effort		Option [2]	Option	Option				
Monitoring								
Pro-active monitoring		Option	Option	Option	Yes	Yes	Yes	Yes
Up/down monitoring					Yes	Yes	Yes	Yes
Reporting options		Claranet Online ClaraCare Vision	Claranet Online ClaraCare Vision	Claranet Online ClaraCare Vision	Claranet Online ClaraCare Vision	Claranet Online ClaraCare Vision	Claranet Online ClaraCare Vision	Claranet Online ClaraCare Vision
Installation of Cisco Router								
Managed router	Yes	Yes	No		Yes	Yes	Yes	Yes
Onsite engineer		Option	Option		Option	Yes	Yes	Yes

Component	Mobile Broadband	Broadband	FTTC	FTTP	EoFTTC	EFM Lite	EFM	Ethernet
Availability								
Site availability (uptime pcm)					99.5%	99%	99.5%	99.5%-99.9%
Care levels								
Standard Care		Available	Available	Available				
Business Care		Available		Available				
Enhanced Care		Available		Available				
Resiliency								
4G backup		Available	Available	Available	Available	Available	Available	Available
Broadband backup		Available	Available	Available	Available	Available	Available	Available
FTTC backup			Available		Available	Available	Available	Available
FTTP backup				Available		Available	Available	Available
EoFTTC backup					Available	Available	Available	Available
EFM backup						Available	Available	Available
Ethernet backup								Available

[1] Broadband Core

[2] Not available on Broadband Core

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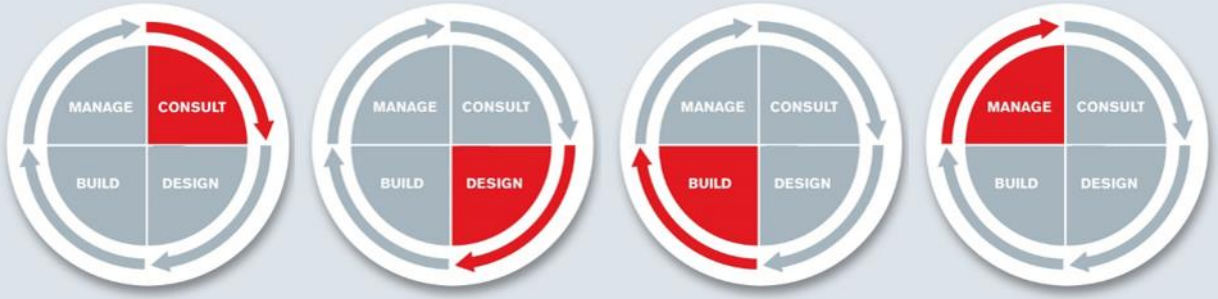

Consult | Design | Build | Manage

Understanding your business is paramount to ensuring that you have the right solution for your business outcomes. The components within this description are used within a range of connectivity solutions provided by Claranet. Depending on the complexity of your requirements one or more of these components may be combined to provide the service required in order to satisfy your business outcomes. Further details can be found in the MPLS Service Description and the Internet Connectivity Service Description.

Consult

Claranet's consulting process ensures that you have the right information, the right recommendations, and the right service options available to you to achieve your business outcomes. One or more workshops may be conducted by Solutions Consultants, Strategy Consultants, Solutions Architects and Enterprise Architects who will be applied at our discretion. Claranet also provide a full bespoke technical consulting service as well as a number of packaged consulting options.

Design

Claranet will undertake to identify which elements and options are required and how they should be configured to meet your requirements. Your solution will normally require the utilisation of a Solution Architect and the output of this process is a proposal document and a Statement of Works (SoW). This forms part of your agreement and will provide the technical specifications for your solution.

Build

The Build section covers the steps involving the configuration and installation of the full service according to the agreed specifications utilising one or more of these components. At the completion of this phase, the connectivity is fully tested and handed over to you with a Handover Document. Once accepted, any future changes will be managed as part of In-Life Management, details of which can be found in the Manage section.

Manage

Once your service is up and running, and the Handover Document is completed, Claranet will monitor your connectivity components as part of your overall solution. This is against a number of performance and availability metrics and where applicable, manage your service 24x7x365 in order to maintain its operation. The parameters of the ongoing management of the service and the appropriate roles and responsibilities are outlined in the appropriate Service Description relating to the service you have.

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Appendices

Here you will find further information regarding the components of the service as well as standard procedures and agreements.

Definitions

The following terms refer to Claranet deliverables, departments and technology:

Term	Definition
Handover Documents	Set of documents produced by Claranet for you. These detail the technical configuration, usernames, passwords, contact details, information and processes relevant to the support of your solution.
Solution Support	Facility that Claranet provides for you to raise issues, faults and questions related to the Services purchased via telephone, email or some other communication medium. Calls to Solution Support will be answered in English.
SoW	Statement of Work. A Claranet document used to capture your specific requirements for the implementation of your Service. The SoW forms part of the Order.
Availability Monitoring	Monitoring that uses ICMP (ping) polling to determine if a given host is available (up). It does not detect any degradation in the Service such as diminished Throughput, only if a host is reachable or not.
CPE	Customer Premises Equipment. This term can be used to refer to any networking equipment (Customer or Claranet owned) installed on your site. For the purposes of this document only it does NOT refer to the NTE, being used to refer to other networking equipment installed alongside it such as routers.
Excess Construction Charges	Charges that will be due and payable where additional infrastructure is required to give new or an extended service at an end user's site. When Excess Construction is required, a survey will be carried out and charges will be individually assessed. These charges are in addition to the standard connection charges which apply for the applicable service.
NTE	Network Terminating Equipment. This device is installed on your premises and provides a point of demarcation for the Services. Sometimes also referred to as a Network Terminating Unit or NTU.
Reactive Monitoring	Monitoring that takes action in response to an event (such as an up/down Service failure);
Throughput	The speed at which data can pass through a certain point, usually measured in bits per second. Eight bits make one byte so data volumes in bytes should be multiplied by a factor of eight to derive the number of bits to transmit (although it should be noted that networks also add overheads so only very rough calculations of the time required to download a specific volume of date can be made in this way)

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Term	Definition
VCs	Virtual Circuits, a generic term for logical association between two endpoints on a packet-switched network. It defines a path between two points but may or may not include specific Throughput guarantees.
VLANs	Virtual Local Area Networks, the term for VCs in an Ethernet network.
Wayleave	A written agreement that allows our partners such as Openreach to access your land so that apparatus can be installed, or maintained, or repairs can take place.

Appendix: Support

Fair use policy

We aim to provide a Broadband and FTTC Service that is fast and reliable. At peak times, many Customers will be using the network bandwidth at the same time.

The majority of our Customers use their broadband service appropriately; their usage levels during peak hours doesn't disproportionately affect the network capacity. A small minority of our Customers, however, use their broadband service inconsiderately; for example, using 'peer to peer' and file sharing software. This can adversely affect the Service quality for all, making it slower for everyone running critical applications.

What Claranet will do

Management of usage: Manage inappropriate use and ensure the service can be used fairly by everyone. If you make persistent inappropriate use of the Service, we reserve the right to manage your bandwidth during peak times, which could result in reduced service speed.

What you will do

4G resilience mode performance: Take into account that the reduced bandwidth and performance of 4G when compared with your service when you are determining which type of traffic you pass across the service when it is running in resilience mode.

Service restrictions

The Maximum Transmission Unit (MTU) supported by the Claranet network for IPv4 traffic is 1500 bytes.

What Claranet will do

Maximum Transmission Unit (MTU): Advise on a lower MTU dependent on the Access Service used where applicable. All packets transmitted greater than the MTU will be fragmented. Packets sent with the D/F bit flagged shall be discarded at ingress to the Claranet network.

Service desk support

What Claranet will do

Support times and Service Desk: Provide support 24x7x365 once the connectivity service has been handed over to you. Full details of how you can make the most of this service will be provided in your Handover Document.

Raising tickets: Changes to your service configuration can be made through the Claranet Online ticket request and details of this can be found in the **Appendix: Support**.

Escalation: In the event that an escalation is required, Claranet provides a clear escalation process to allow you to contact the appropriate person within the company. Details of this can be found in the **Appendix: Support**.

Change Control Process

Claranet's Change Management team are responsible for requests relating to any product and service configuration changes you wish to make. The team specialise in configuration and follow strict processes and ensuring that the changes are authorised. The Change

Management team are also responsible for Claranet's Change Advisory Board (CAB), which discusses and approves changes raised internally. To make a change request, see the section below on "Raising a support ticket".

Raising a support ticket and a Request For Change (RFC)

Claranet provides two ways for your approved contacts to raise, track and update standard support tickets; through Claranet Online and by telephone. For security and audit reasons, you are required to make all requests for change through the customer portal and only portal users with the correct privileges can request a change. You will only see your services listed so please select the service relating to the request for change. In the event that the customer portal is unavailable, please contact Claranet by telephone, where an emergency procedure will be in place to log change requests on your behalf. Request for changes will not be accepted through this number at any other time.

What Claranet will do

Through Claranet Online: Support tickets raised through Claranet Online are assigned to the appropriate support team based on the service you need the support for. You will only see your services listed so please select the service relating to the incident or to the service request. The response time will start from as soon as your ticket has been submitted.

By telephone: It is not always convenient to raise support tickets through the portal and therefore you may choose to use the telephone instead. When choosing to raise a support ticket using the telephone you must provide proof of identity following Claranet's standard security procedure. The response time will start from as soon as your telephone call has ended.

Escalating a ticket

In the event that you need to escalate a ticket, Claranet is ready and available to help you quickly bring your issue to closure. Within each level of the escalation path the person you speak with is responsible for evaluating your situation, facilitating the resolution plan and acting as your sponsor. The benefits of the escalation procedure are:

- ITIL accredited staff owning your escalation
- A focus on service recovery
- Improved communication
- Consistent process

An escalation may be initiated when, after working through our standard support processes and with our teams, you are not satisfied with the level or timeliness of the service you have received. Additionally, an escalation should be initiated when there is tangible impact to your production environment, or there is high risk to your business operations.

What Claranet will do

Escalation Manager: Assign an Escalation Manager who will deal with your escalation and collaborate with you to develop a communication plan. A technical plan of action may be needed to ensure resolution of a technical issue. Your Escalation Manager works as your advocate internally and will become a virtual member of your own problem resolution team. Should you feel dissatisfied with the escalation process, please contact your Account Manager directly.

Appendix: Service levels

Service delivery

Break / Fix levels and response times including Cisco routers maintenance level

A break/fix service level begins at the point a Claranet engineer determines a replacement router is required. The circumstances where a fix service level is deemed to be met are:

- When the service has been fixed within the standard and expected response time
- Where you receive a telephone call (within the service level response time) resulting in a fix over the telephone
- Where you receive a telephone call and you defer the visit of an engineer to a specific time, the fix time is measured from the specific time you specify
- When a part which can be fitted by you arrives on site

- Where it is subsequently discovered that the issue giving rise to the telephone call falls outside the Services agreed to be provided by Claranet
- When the equipment has been returned to an acceptable operational status or an item of loan equipment has been supplied
- Where the fault relates to an excepted service

What you will do

Efforts to resolve an issue: You are responsible for providing reasonable efforts, support and information to Claranet to help in the resolution of any technical issues.

Implement corrective actions: You are responsible for implementing corrective actions and workaround procedures recommended b Claranet to resolve incidents.

Service outage: In the event of a Service outage, you are responsible for complying as quickly as possible with any requests from Claranet for help with diagnostics. Any delay in resolving the fault due to you not being available or not complying with Claranet's requests may impact the validity of any service Levels.

Table: Service Delivery Response Times

Priority	Service Level Response	Description
1 – Critical	Within 1 hour	Total service is unavailable
2 – Major	Within 2 hours	Partial service, an element of the total service has failed
3 – Minor	Within 4 hours	Impaired service, no element has totally failed but there is a quality issue
4 – Request	Within 1 Business Day	The service is unaffected. Request for product related technical advice or configuration change
5 – Question	Within 1 Business Day	General information and feature questions related to the Service

Service levels

The Service Level determines the parameters by which the service is accountable. Many of the components of your service are designed to operate in a high availability configuration, with which there is an implied acceptance that from time to time an element may fail. Therefore for high availability options of components, unscheduled downtime is not considered to have occurred if one element fails and another element takes over the workload**.**

What Claranet will do

Information delivery: Obtain the results for each of the metrics and contact you according to your list of authorised contacts in the event that any results fall outside of the acceptable parameters.

Metrics exceeding the thresholds: In the event that a monitored metric exceeds the acceptable thresholds, Claranet will raise a support call to investigate the incident and contact you in accordance with the escalation details held.

If Claranet fails to deliver the stated service level, Claranet agrees that you shall be entitled to receive, in lieu of all other remedies available to you, Service Credits as set forth in this section against the fees owing to Claranet under the Agreement.

Measure of availability

Any time in which the Claranet monitoring system is unable to receive or process monitoring data shall not be assumed to be unscheduled downtime. If you initiate a Service Credit request, this will put into a process where Claranet coalesce the systems monitoring data and logs with your own record of when and where an outage occurred. The Service Credits will be available for that agreed window. You have the option to dispute records with Claranet, where upon systems monitoring data can be provided to you.

In the event of the failure of Customer premises equipment supplied by us we will measure Non-availability from the time that you log a Critical call with our helpdesk until such time as the Connectivity Service is restored.

In the event of the connectivity between us and you failing, preventing Connectivity Services from being operational we measure Non-availability as follows:

- Ethernet connectivity: from the time our monitoring systems detect the service fails until such time as the Connectivity Service is restored

If our whole network or a part thereof fails preventing Connectivity Services to you from being operational we will measure Non-availability from the time the network or part thereof experiences a failure to such time as Connectivity Services are restored to you. Periods of Non-availability will be measured by our internal system logs.

Table: Service availability thresholds

Service	Monthly availability	Monthly max downtime (min)	Primary circuit target time to fix (hour)
Ethernet with Router	99.5%	216	5
Ethernet First Mile with Router	99.5%	216	8
Ethernet First Mile Lite with router	99%	432	8
Ethernet over FTTC with router	99.5%	216	8
Leased Line with router	99.5%	216	5
Ethernet + Broadband/FTTC with Router	99.5%	216	5
Ethernet First Mile + Broadband/FTTC with Router	99.5%	216	8
Ethernet First Mile Lite + Broadband/ FTTC with router	99%	432	8
Ethernet over FTTC + Broadband/ FTTC with router	99.5%	216	8
Leased Line + Broadband/FTTC with router	99.5%	216	5
Ethernet with Ethernet Backup	99.9%	43.2	5
Ethernet Separation	99.95%	21.6	5
Ethernet Separation Plus	99.99%	4.32	5
Ethernet Separation Plus Dual Site	99.9%	43.2	5

With backup circuits there is a “Primary Circuit Time to Fix”. Once it is reported that you are running on your backup circuit, we agree to get your primary Ethernet or Leased Line back up within this time specified

In the event that you and Claranet agree that Claranet has failed to meet any service level guarantee during any given calendar month, Claranet will credit your account with a Service Credit. Service Credits shall apply only to the fee(s) for the affected service(s). Service Credits shall be deducted from the relevant monthly fee due in respect of the second month following the month in which an agreed Service Credit is claimed. The maximum amount of Service Credit a Customer can receive in each calendar month relating to this agreement is fixed to 50% of the fee for the affected Service. The Service Credits issued are liquidated damages and, unless otherwise provided in this agreement, such Service Credits will constitute your sole and exclusive remedy with respect to the failure for which they are payable.

Service availability guarantee

In the event that you believe you are entitled to compensation for the Connectivity Service in accordance with the Service Levels and in order to obtain your credit simply notify us that you think you are so entitled within thirty (30) calendar days and we will check our Non-availability records, compare them against any Critical calls we previously received from you at our helpdesk and confirm whether any credit is due. In the event we decide credit is due, your entitlement will be applied to the next following monthly invoice in accordance with the tables below.

Router maintenance

Item	Maintenance Ser4vice Level
Replacement of Managed Claranet Cisco Router for Ethernet, Ethernet First Mile, Broadband and FTTC	24 x 7 x 5hr replace
Replacement of Managed Claranet Draytek, ZyXEL or Technicolour Router for FTTC and Broadband	Next Business Day

Broadband, FTTC and FTTP

Where Broadband, FTTC and FTTP is the primary circuit and fix time exceed target fix times Service Credits will be payable as per the table below

Percentage service availability per calendar month	Percentage credit of monthly charge for the variant, for the calendar month in which non-availability occurs
Standard Care	No Service Credits
Business Care	10%
Enhanced Care	10%

Ethernet over FTTC with router: The service level is 99%

Percentage service availability per calendar month	Percentage credit of monthly charge for the variant, for the calendar month in which non-availability occurs
< 99.5% but ≥ 98.5%	5%
< 98.5% but ≥ 97.5%	10%
< 97.5% but ≥ 96.5%	15%
< 96.5% but ≥ 95.5%	20%
< 95.5%	25%

Ethernet First Mile Lite with router: The service level is 99%

Percentage service availability per calendar month	Percentage credit of monthly charge for the variant, for the calendar month in which non-availability occurs
< 98.99% but ≥ 98%	5%
< 98% but ≥ 97%	10%
< 97% but ≥ 96%	15%
< 96% but ≥ 95%	20%
< 95%	30%

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Ethernet First Mile with router: The service level is 99.5%

Percentage service availability per calendar month	Percentage credit of monthly charge for the variant, for the calendar month in which non-availability occurs
< 99.5% but ≥ 98.5%	5%
< 98.5% but ≥ 97.5%	10%
< 97.5% but ≥ 96.5%	15%
< 96.5% but ≥ 95.5%	25%
< 95.5%	50%

Ethernet and Leased Line with router: The service level is 99.5%

Percentage service availability per calendar month	Percentage credit of monthly charge for the variant, for the calendar month in which non-availability occurs
< 99.5% but ≥ 98.5%	5%
< 98.5% but ≥ 97.5%	10%
< 97.5% but ≥ 96.5%	15%
< 96.5% but ≥ 95.5%	25%
< 95.5%	50%

Network performance

Claranet offers the following maximum packet, latency and jitter of the Primary Circuit of the Standard Site Package, measured using the aggregate network availability between the Claranet Customer Premises Equipment LAN port to the Claranet Provider Edge router. An approximate indication of performance information can be found using the ClaraCare Vision Service, but this is not to be considered an accurate measurement of performance, as may exclude Scheduled Outages, etc.

Performance is measured during Actual Uptime, as a monthly average in arrears from the Service Commencement Date and each month thereafter. These performance figures are not applicable when the service is operating over a 4G resilience connection.

Service	Maximum packet loss (total per month)	Maximum RTT (% within level per month)	Maximum jitter (% within level per month)
DSL/FTTC with Router **Resilient DSL/FTTC , Dual Router** **EoFTTC with router** **Resilient EoFTTC with router**	1%	90% within 70ms	n/a
Ethernet with Router **Ethernet + DSL/FTTC with Router** **Resilient Ethernet with Router** **Ethernet First Mile with router** **Leased Line with router**	0.5%	90% within 50ms	(For Gold)

Wires Only, time to fix

Where you do not have a standard site package at a site, a Service Credit of 5% of that months Ethernet or Leased Line fee for the affected Service is payable, should the minimum availability not be achieved.

Compensation claims

Compensation claims must be submitted, in writing (email or letter), within 30 days from the service level guarantee breach to which they refer. All claims must be submitted to the appointed Account Manager and/or Service Manager. You agree to correct problems and to attempt to minimise the recurrence of problems for which you are responsible that may

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prevent Claranet from meeting the service level guarantees. Requests for support received by the Service Desk by means other than telephone or request ticket (for example, by fax) will be excluded when calculating service levels.

Exceptions

Claranet excludes responsibility for meeting any service levels to the extent that meeting the service levels is affected by the following items:

- if you are in default under the Agreement;
- in respect of any non-availability which results during any periods of scheduled maintenance or emergency maintenance;
- in the event that the Service is disrupted due to unauthorised users or hackers;
- in the event that the Service is unavailable due to changes initiated by you whether implemented by you or Claranet on behalf of a customer;
- in the event that the Service is unavailable as a result of you exceeding system capacity;
- in the event that the Service is unavailable due to viruses;
- in the event that the Service is unavailable due to the your failure to adhere to Claranet's implementation, support processes and procedures;
- in the event that the Service is unavailable due to the acts or omissions of you, your employees, agents, third party contractors or vendors or anyone gaining access to Claranet's network, control panel; or to your website at the request of a customer;
- in the event that the Service is unavailable due a Force Majeure Event;
- in the event that the Service is unavailable due to any violations of Claranet's Acceptable Use Policy;
- in the event that the Service is unavailable due to any event or situation not wholly within the control of Claranet;
- in the event that the service is unavailable due to your negligence or wilful misconduct of you or others authorised by you to use the Services provided by Claranet;
- in the event that the service is unavailable due to any failure of any component for which Claranet is not responsible, including but not limited to electrical power sources, networking equipment, computer hardware, computer software or website content provided or managed by you;
- in the event that the service is unavailable due to any failure local access facilities provided by you; and
- in the event that the service is unavailable due to any failures that cannot be corrected because the you are inaccessible or because Claranet personnel are unable to access your relevant sites. It is your responsibility to ensure that technical contact details are kept up to date by submitting a request ticket to confirm or update the existing the technical contact details.
- in the event that the service is unavailable due to use of non Openreach MCT approved devices provided by you

Exceptions specific to Managed Routers

Router Maintenance services do not include the correction of any fault due to any of the following occurring by you or your end users:

- Failure to maintain a suitable environment for the Equipment at the Place of Use in accordance with industry standard specifications (including without limitation failure to maintain a constant power supply, air conditioning or humidity control).
- Neglect or misuse of Equipment or failure to operate Equipment in accordance for the purposes for which it was designed.
- Alteration, modification or maintenance of the Equipment by any party other than Claranet or authorised partners.
- Transportation or relocation of Equipment except where it has been performed by or under the direction of Claranet or authorised partners.
- Use of defective or inappropriate supplies (including but not limited to faults caused by the use of non-manufacturer components or modules) with the Equipment.
- Any defect or error in any software used upon or in association with the Equipment.

- Any accident or disaster affecting the Equipment (including without limitation fire, flood, water, wind, lightning, transportation, vandalism or burglary).
- Electrical work external to Equipment.
- Modification or alteration of an attachment to the Equipment or removal of the same.
- Matters arising before the Commencement Date or after termination of this Agreement.
- User error and physical user damage.
- Painting or refinishing the equipment.
- Software related errors.
- Failures from moves, power surges etc.
- Cabling issues.
- Network faults caused by equipment not included as the Equipment in respect of which the Services are provided.
- In the event that a fault is diagnosed as an Excepted Service you shall, if it requires the Excepted Service, provide a written request to proceed and acceptance of charges quoted.
- If on arrival the fault is found to be an Excepted Service Claranet will levy Additional Charges at the standard scale rates in force from time to time.
- Travel and shipping costs outside Mainland UK are an Additional Charge.
- The areas of exclusions due to travel time are highlands of Scotland, Cornwall, West Wales and Cumbria.
- This agreement does **NOT** include onsite engineer support for the purpose of and not limited to: router reboot, re-connecting cables, diagnostic fault finding.

Cancellation of service

What Claranet will do

Equipment storage costs: You must remove equipment on or before the cancellation date. If your equipment remains within the facility after the cancellation date, then Claranet will turn off the equipment and charge for the storage of the equipment at the applicable daily rate and pro-rata. If the your equipment is not collected by yourself within 3 months, Claranet will assume ownership over your equipment. Any costs associated with the disposal of such equipment will be re-charged to you.

Decommissioning the service: Uses management software to perform deletion of data on disk. As physical disks used in shared storage devices are securely shared between Customers, they are not physically destroyed but rather the relevant data is deleted. Claranet do not overwrite each individual bit of data on the disk (which is known as ‘zeroing’ the data). Instead, each individual bit on the physical disk will be overwritten randomly over time by new data

Revision

Revision	Date	Updated by	Notes
V10.7	11 Nov 2016	David Palmer	Mobile Broadband updated for Internet facing service and 4G. Managed router section change “Non-Cisco” to “Draytek, ZyXEL and Technicolour.