

# Openreach Services delivered over Fibre To The Cabinet (FTTC)

## Pilot Product Proposal / Discussion Document

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### **Document Description**

This document sets out the Openreach current proposals for a pilot product based on FTTC architecture. It takes into account feedback from Communications Providers and will evolve as further discussion and developments take place

## **Confidentiality Statement**

This document is circulated for the purposes of consultation. As such, the contents may be subject to change following such consultation.

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## Introduction / Background

This document has been updated as a direct result of feedback received from CPs in response to the consultation document issued by Openreach regarding the GEA over FTTC proposal. It also reflects discussion at the Openreach 'Open House' event held on 14<sup>th</sup>-15<sup>th</sup> October 2008 following the initial CP responses.

This document now provides CPs with the latest Openreach view of the GEA over FTTC Product Proposal for the Pilot phase of service (planned to start in Summer 2009). Further solution detail building on this document will be shared with CPs through multi-lateral forums and additional Product Documentation will be made available as and when solution designs, Terms and Conditions and Pricing information are determined.

Openreach would like to state that many of the points made, and indeed questions raised by CPs are constructive and helpful in clarifying the Openreach proposal, affirming that the Openreach proposal can meet CP needs, and assisting Openreach assessment of potential additional features and commercial options that will have a place on the product evolution roadmap.

It is Openreach's intention to provide in the form of GEA over FTTC a wholesale product that allows retail CPs to be successful in selling fast broadband service to their end user customers.

We have taken on board ideas for product evolution and commercial options and have reflected this appropriately within the document. We expect to work through details of these options with CPs through both bi-lateral and multi-lateral dialogue.

In the UK, availability of broadband on the BT network is estimated to be approximately 99%, the best of any country in the G8. Broadband take-up among households is around 60%. Whilst today bandwidth demand is primarily driven by internet browsing, there are early signs that the demand for broadband service in the UK is increasing every year. Government and UK Businesses are calling for the communications Industry to continue to improve the delivery of the vision of a 'Broadband Britain'.

End user demand for ever greater bandwidth, 'throughput' stability and quality broadband service continues to grow. This is driven by applications such as IPTV & HDTV, Gaming, Film & Music downloads and to some extent the growing needs and expectations of 'home workers'. The trend towards user generated content also signals the need for greater upstream bandwidth. High speed broadband is also on the agenda of the Government and interest groups from the perspective of the benefits that this may bring to the UK economy.

Broadband / DSL performance currently is heavily dependent on the distance and quality of the access network copper line from the Exchange building to the end customers premises.

Openreach has already launched to the market, a pilot Generic Ethernet Access (GEA) over FTTP product, which offers a faster access network (up to 100Mbit/s downstream speed) which has the potential to support Broadband at 'New Build' sites throughout the UK.

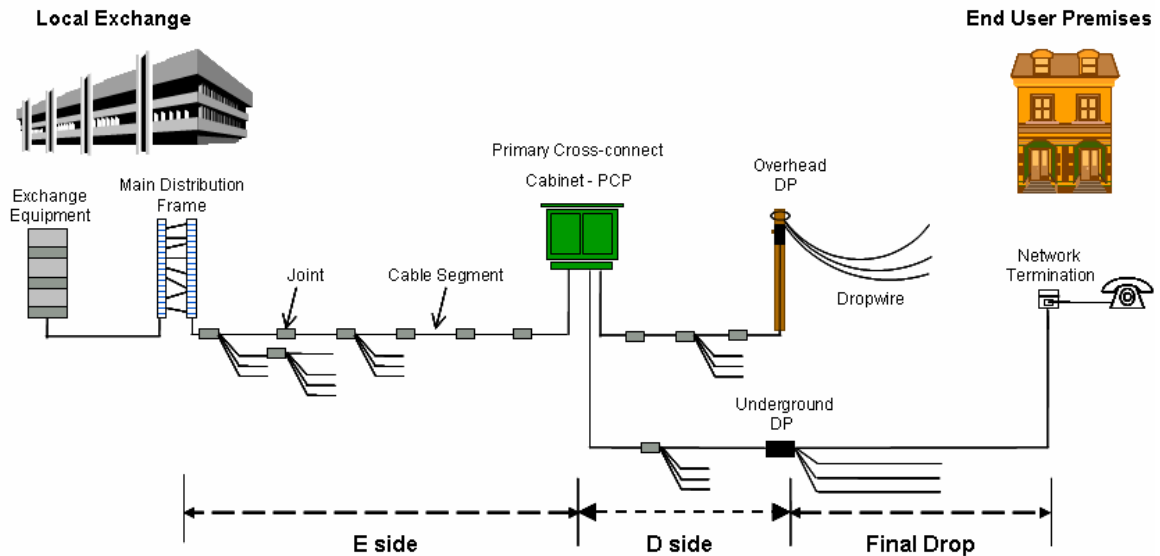
We are now considering how we might utilise Fibre to the Cabinet and VDSL2 technology to offer the potential of significantly improved performance of both downstream and upstream speeds and throughput stability than can be delivered by ADSL2+ from a traditional copper access network exchange-served connection.

Within this document we outline our proposal for an additional product in the Openreach NGA portfolio that utilises FTTC (as distinct from the GEA product offered over FTTP infrastructure) following initial consultation. We continue to welcome our customers' views on this proposal, through written response, bilateral and multi-lateral meetings as well as active participation in

the Openreach NGA Forum and its working groups. The pilot product proposal will continue to evolve as Openreach takes into account feedback on this and related documents.

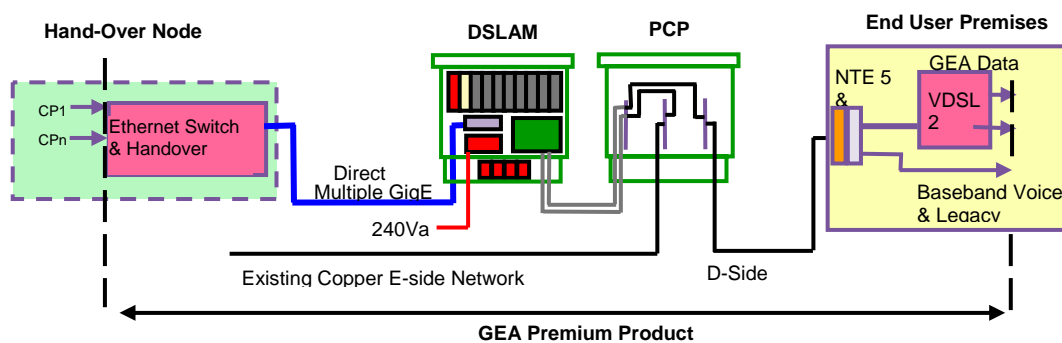
### Limitations of the Copper Access Network supporting Broadband

In the access network today, copper cabinets (also known as Primary Connection Points (PCPs) are fed by a high-capacity Exchange-side ('E'-side) copper cable. This electrical connection provides individual 'pairs' into the cabinet. To provide service to the customer, smaller cables on the 'Distribution Side' or 'D'-side of the cabinet connect to underground or overhead Distribution Points (DPs) which then radiate copper feeds into the End User premises. This is illustrated by an example copper network architecture diagram below:



### Proposed FTTC Architecture

An overview of the proposed architecture for FTTC is shown below



The product will utilise DSLAM electronics in the cabinet as illustrated on the diagram above.

## GEA over FTTC – Product Proposal Overview

The GEA / FTTC product is intended to be part of the new and developing Openreach NGA portfolio following on from the launch of GEA / FTTP. It is being developed with a positive end user experience at its centre and to allow CP ease of use across the various products in the portfolio (i.e. same or similar processes, systems and network interfaces across the product set).

The product is designed to give maximum flexibility for CPs to differentiate their service at the IP layer and above, including setting end user broadband speed, but also allows Openreach to deliver the necessary return on investment over the life cycle of the infrastructure product.

For consistency within the Openreach product portfolio (specifically with GEA over FTTP) we propose to develop GEA / FTTC to offer an 'active' bit-stream wholesale network connection from the Openreach Handover Point (OHP) to the end user premises and with Ethernet presentation at User Network Interfaces. It may be used by CPs as a component of their own retail offering to End Users or to construct wholesale product(s) for sale to Service Providers (SPs).

The Ethernet service to the premises is delivered on a single VLAN and is presented to the CP via one (or more as required by CPs) 1Gbit handover port from an Ethernet Switch in the Point of Handover (PoH).

The product offers access from the Point of Handover rather than 'SLU-type' access to the cabinet. This reflects that the economics of a major investment in FTTC technology and the potential addressable market for the product proposed will only be effective where the cabinet electronics are shared by all CPs operating in that district. The current launched SLU product will still be available to the market, but is not considered further in this document.

The FTTC infrastructure underpinning the product will be deployed as an overlay to the existing copper network and will provide a fast connection over VDSL2 as an alternative to ADSL2+ based broadband over the traditional exchange-terminated copper network. CPs will be able to provide their broadband services over this active network connection. Baseband voice services will continue to be delivered over copper from the end user premises to the local exchange.

The VDSL2 technology utilised in GEA / FTTC is used as a conveyance technology to deliver faster bandwidth to the end user premises. The provision of broadband service to the end user premises will remain a CP responsibility and Openreach is not proposing to offer DSL service presentation to the premises.

GEA / FTTC therefore provides an alternative product and commercial choice for the CP to buy a Fast Access connection from Openreach in order to provide high speed broadband service to the end user.

GEA / FTTC will permit one CP to buy the Fast Access connection on the copper pair. This is necessary to ensure that the available bandwidth over GEA / FTTC is allocated for delivery of the best broadband speed technically possible to that premises. More than one copper pair connection can be provided to the premises if the end user requires additional fast service.

Base-band voice service can be provided by either the same CP or a different CP over the existing copper network using WLR on the same copper pair as used by GEA. This replicates the WLR + SMPF model where GEA replaces SMPF.

In the initial Pilot phase of service, base-band voice may also be provided by a CP using MPF on the same copper pair. Within this Pilot phase, the CP that owns the MPF service will be able to order GEA over FTTC (changes to MPF product contractual terms will be made to include GEA over FTTC as a valid service on the line).

'xMPF' (shared use of the copper pair by two different CPs buying MPF and GEA separately) is recognised as a key requirement for some CPs. Openreach will work with CPs in Industry Forums and bi-laterals to assess further the demand / benefits of this and to determine the appropriate commercials and process solutions that would be needed for this to work. If possible to deliver, this may be included in the Pilot phase, but otherwise will be considered for the wider market roll-out after the Pilot.

Note - with GEA, the X-MPF concept of different CPs supplying both the voice and Broadband changes from the copper only definition of xMPF. This is due to the presence of both a Fibre and copper connection on the 'E-side' of the cabinet therefore removing the necessity for full copper line sharing instead being dependent on CPs agreeing to D-side copper sharing only.

Finally we are keen to explore the commercial viability of making GEA available independently of the need to buy WLR or MPF base-band voice. This model would mean that there is no dependency to buy WLR or MPF service and a CP can instead just buy the GEA over FTTC product and can provide voice and broadband services over a single GEA connection. This product option would need to reflect in the price an appropriate overall charge for the copper pair and the service / infrastructure facilities offered.

### ***Product Compatibility / Incompatibility***

Even though premises may have the ability to receive GEA / FTTC-based service from their CP supplied from a FTTC-enabled cabinet, if they choose not to take up service, then all existing products currently provided to the premises over the copper-only network can continue to be supported.

If the end user takes GEA / FTTC via their CP then existing Baseband voice service can continue to function in parallel on the same copper pair serving the premises (outlined in the section above).

WLR ISDN2 and ISDN30 products, SMPF and the data path element of MPF products and the downstream CP broadband services that use these products will not be compatible with the VDSL2 signals of GEA / FTTC.

FTTC infrastructure offers a different conveyance mechanism from traditional copper network and so some CP products may require additional technical development to operate over this network. **CPs are advised to make an assessment of their portfolio to determine what work may be required.**

Exchange Only Lines - Copper running directly from Exchanges rather than via cabinets serves around 11% of end user premises. The GEA / FTTC solution proposed here is not intended to be offered on these 'Exchange Only Lines' due to current technical restrictions on the deployment of VDSL2. There may be options to meet additional bandwidth demands for these lines through future development of FTTC-based services.

### ***Product Variants / Bandwidth Rates***

We propose to help CPs meet the expected ever-increasing end user demand for bandwidth by offering the following tiered Ethernet bandwidth variants for the Pilot:

Peak downstream	Assured downstream	Upstream (base)	Upstream (options)
20Mbit/s	10Mbit/s	2Mbit/s	5Mbit/s
30Mbit/s	15Mbit/s	2Mbit/s	5M / 10Mbit/s
40Mbit/s	20Mbit/s	2Mbit/s	5M / 10M / 15Mbit/s

In addition to these products and in response to CP interest, we will work with CPs to determine how a lower speed of product (beneath 20Mbit/s) might be defined (and priced). Aside from this, any premises identified as not being able to receive the 20Mbit/s entry-level product variant would still be able to order existing LLU services on the copper network.

*Peak downstream:*

The Peak downstream rates specified above are anticipated to be the maximum or 'Peak Information Rates' (PIR) available to the End User.

*Assured downstream:*

Within each of the Peak downstream rates specified above, we would seek to offer a minimum, or 'Assured' rate, of service that the end user can also anticipate. These rates would be driven directly from the Peak downstream rate ordered by the CP.

We propose that the minimum 'assured' rates will be un-contended between the Openreach Handover Point (OHP) and the end user premises. The PIR traffic above the minimum rate can be subject to contention on the Openreach Network and we will offer standards for CPs to mark priority traffic that must get through (e.g. Voice or TV data packets) within the assured limit and lower priority traffic that can be dropped if the network becomes congested. We would be keen to consider higher rate assured products if the demand is demonstrated.

We will make further details of the solution to provide Maximum (Peak) and Minimum (Assured) rates of service available during subsequent Industry wide communications.

*Upstream (base):*

Every GEA over FTTC variant will deliver 2Mbit/s of upstream capability as standard. This will be un-contended from the cabinet to the OHP.

*Upstream (options):*

We also propose that higher upstream rates (5, 10 or 15Mbit/s) are of less obvious benefit to end users currently, and could be purchased as an optional upgrade to a standard 2Mbit/s offering. Again, these would be un-contended from the cabinet to the OHP.

The actual rates that can be supported on any individual line will be influenced by the distance of the premises from the cabinet on the D-side copper connection and the number of end users signed-up and using the common cable which will determine cross-talk noise impact).

The Peak rate capable of delivery to individual end user premises would initially be determined by a pre-activation assessment / estimate and ratified on completion of service activation. Openreach expects to comply with relevant industry codes of practice in managing this assessment.

### **Other Functionality / Services**

Openreach recognises that Intermediate Agent (IA) capability used to manage the verification of an end user's CPE on the circuit is a high priority requirement for our CP customers and their preference that this should be included in the product offering at the earliest opportunity. If availability is confirmed by our hardware suppliers, Openreach will work with CPs to establish how and when to make the end user identification aspects of IA available. Line speed data requirement aspects of IA, again subject to confirmation of technical capability, will be addressed in a post-Pilot enhancement.

A full range of service order types consistent with other Openreach products will be offered (New Provisions, Transfers, Working Line Takeovers, Amends, Cessations, Migrations, Modifications, etc...) and complaints / escalations processes will also be offered.

Simultaneous provision of GEA over FTTC with associated narrowband service will be considered for earliest feasible deployment and Openreach is keen to work with CPs to determine the appropriate process in readiness for the wider volume roll-out in 2010.

GEA over FTTC service can be changed remotely by soft configuration without engineer attendance and we would support re-grades of services (bandwidth changes), transfer of service ownership between CPs and Modifications of service (adding/removing additional functionality or care levels when available) and re-routing of VLANs at the Point of Handover without the need for engineer manual activity.

Note - Processes that involve changes to the WLR or MPF products (migration, Sim Provide), cannot be processed without engineer activity.

The product will have the benefit of optional care levels including the base level of service (within the product offering), as well as enhanced levels of service to be agreed. Within the Pilot phase we will make a '20 hour enhanced response' option available in addition to the 40 hour standard response service. The product will offer Service Level Agreements appropriate to the service and the underlying technology.

As enhancements to the product for wider market roll-out we also intend to use our operational learning from the Pilot and the pre-pilot Technical Trial to assess potential for further repair product enhancements/options below 20 hours.

We propose that for the Pilot and beyond any failure of network electronic components or the fibre connection between the OHP and the cabinet that would affect larger numbers of end users would receive appropriate faster repair response.

CPs will receive monthly invoices for service activations, changes to service, cessation, ongoing rental payments, etc... as consistent with other Openreach products.

Openreach currently commits to AM or PM appointments slots on other products, but we recognise the importance of a defined appointment slot to manage the cessation of LLU-based service and the activation of FTTC VDSL2-based service and taking learning from the technical trial and Pilot phases to determine what is feasible. We will aim to deliver for the Pilot a 2 hour activation process and seek to affirm this and if possible improve for wider market roll-out through optimisation of the service installation process (more details on this are in the *Technology and Home Environment Section* below).

## Technology Solution and Home Environment

Openreach will **overlay** the existing Exchange-side (E-side) copper cable with a fibre optic cable connecting into a stand-alone or combined cabinet and to install electronic components within the exchange and the cabinet to support VDSL2 signalling. From the cabinet and over the existing Distribution-side (D-side) copper network, a high bandwidth VDSL2 based service will be used to convey signals to the end user premises.

VDSL2 as a technology is capable of delivering bandwidth on a 2:1 downstream / upstream ratio (e.g. 30Mbit/s downstream means 15Mbit/s can be delivered upstream), but owing to the way network components manage bandwidth across the customer base, we propose upstream speeds closer to 40% of the downstream speed (this is reflected in the product variants listed earlier in this document).

VDSL2 as the conveyance technology is proposed as the only option for the Pilot. We favour this as a single standard for the FTTC product is more cost effective, and in the majority of cases VDSL2 offers better peak performance of service to a greater percentage of the customer base and also offers significantly better upstream bandwidth than ADSL2+ can offer.

We recognise that Combination cards allowing use of both standards are becoming available but we understand that the primary reasons for CPs' interest in ADSL2+ is service installation simplicity and removing the need for and cost of an engineer visit to the premises. We believe there are other better ways to address the service installation issues, such as the

development of self install components and VDSL2 modem functionality integration into other CPE.

For the pilot phase, in the interests of ensuring early service integrity (identify, diagnose and address issues), Openreach engineers will install the 'Service Specific Front Plate' (SSFP) and VDSL2 Modem in the premises. The purpose of the SSFP is to isolate the high frequency VDSL2 signals routing to the VDSL2 modem from the existing legacy products/wiring within the home to prevent any service degradation on those products.

We recognise the need for service installation simplicity and are keen to look at options to optimise this model at the earliest opportunity, either after the pilot in readiness for wider market roll-out or within the pilot if feasible. Simplification of this process can be made by:

- The modem functionality becoming part of the Openreach-owned SSFP (potentially as a 'plug-in model for ease of installation) or
- CP acceptance of an Openreach/Industry agreed chipset standard integrated into CP's CPE and agreement on specification to allow Openreach to terminate an Ethernet session and be able to execute remote diagnostics.

Openreach recognises that home environment installation options will need to be assessed carefully to provide the optimal solution for wider market roll-out beyond the pilot and will be keen to work with CPs in Industry Forums to determine the best solutions to achieve that.

The VDSL2 Modem is anticipated to offer 2 Ethernet ports, one for fast data presentation (supporting CP-provided broadband) for use in the Pilot and the other will be spare in anticipation of future product developments. This piece of equipment will support the TR069 functionality and control management standard.

At this stage we anticipate that CPs (rather than Openreach) will continue to own and provide the router/hub CPE that interfaces with the GEA modem, this will need to be developed with an Ethernet interface to the GEA modem.

We anticipate some level of Line Management (LM) capability being built into the product to support the offering of an optimised 'assured' bit-stream bandwidth service. The product will support low jitter / latency standards where at all possible.

The product might be enhanced to offer CPs the ability to manage some line characteristics via an OSS interface, within the bounds of our tiered product structure. This might expose a broader set of VDSL port configuration options and matching VLAN configuration options. Openreach will work with CPs to understand any specific needs for this that may be compatible with the Openreach proposed solution as further enhancement to the product after the pilot phase.

Remote Test & Diagnostic capability will be available as part of the product and this emphasises the significance of Openreach having the VDSL2 Modem ('active' NTE) present in the premises.

Illustrations of the VDSL2 Modem ('Active' NTE) and the SSFP are shown below.

**VDSL2 Modem (a.k.a Active NTE) –  
The Picture reflects the Optical Network  
Terminator (ONT) for GEA over FTTP and we  
Anticipate a similar design for the Active NTE**

**Service Specific Front Plate**



The VDSL2 Modem will be designed for installation within the home and will require mains power supply from the end user. It will ideally have suitable service activity indicators to support visual fault diagnostic processes with the end user.

## Handover from Openreach to CPs

GEA / FTTC will hand over to the CP's own network within the nominated Point of Handover (PoH) rather than from the street-sited Cabinet. Openreach will work with CPs to identify the best locations and the appropriate total number of PoHs. We envisage that each GEA/FTTC-enabled area will terminate on one and only one PoH, at which a CP can connect to the GEA/FTTC product.

The total number of PoHs is currently anticipated to be between 850 and 1000 nodes. PoHs will cover a much wider geographic area than typical Exchanges do today and so the cabinet-to-exchange fibre connection will reach further than typical 'E-side' copper connections today.

The PoH presentation to the CP will be a fibre interface carrying Ethernet to a CP Flexibility Point within the PoH. It will carry the traffic from all of the CP's customers who are served from cabinets within the PoH catchment area. CPs will be able to order and use as many connection ports as they require to manage their end user customer base (each will be chargeable). Connectivity is required between Openreach's equipment and the CP's exchange-located equipment or backhaul presence within the PoH building – this will be similar to the GEA Connectivity Handover Product for GEA / FTTP.

There will be no integrated backhaul service beyond the PoH exchange as part of the GEA / FTTC product, but CPs would be able to utilise their existing backhaul services or where required order new services from their chosen alternative supplier. We understand the need for flexible and cost effective backhaul options to make the most of the uplift in the Access Network speed offered by GEA over FTTC and this will be considered by the Openreach Ethernet product line to quantify the market demand.

Data from multiple GEA circuits (over FTTC or FTTP infrastructure) could hand over to the CP on a single fibre within the Exchange.

Resilience options will be considered where technically and commercially viable.

## Future Enhancements

Although not intended to be a part of the initial GEA / FTTC product Pilot, we will consider some of the following potential enhancements to the product in a further Market Deployment and would be interested to understand our customers' needs for Openreach to provide directly or support CP provision of any of the following types of functionality:

- Re-alignment of the VDSL2 Modem electronics to simplify service installation
- A Self-Install Service Specific Face Plate
- Alternative VDSL2 configuration options

- Ethernet over ADSL2+ conveyance from the cabinet to the premises (as an alternative to the VDSL2 conveyance). This is subject to commercial viability.
- PATS-quality voice support (i.e. components in the Openreach product in support of CP-provided voice service)
  - Battery back-up supply to Active NTE in the premises and / or DSLAM in the cabinet
  - Separate dedicated Voice port within the Active NTE modem with embedded ATA functionality
- Multicasting support.
- Double tagged VLANs (aka SVLANs)
- Higher bandwidth and symmetric bandwidth product variants

Openreach will not be able to offer a voice capability on GEA over FTTC within the pilot phase as it requires further work with our technology vendors to agree a viable solution and further work with CPs in Industry Forums to confirm this. The evolution of the Home Environment / Installation process and the roles of Openreach and CP CPE in providing service is a major dependency for the solution.

We anticipate that delivery of a solution to support CP-provided PATS quality voice could be developed and made available from mid 2010. Openreach is keen to work with CPs to establish clear requirements and to apply the appropriate timeline/priority.

Although not feasible for the Pilot, Openreach is keen to consider viable ways of delivering higher speed services in future developments if CPs can demonstrate the market demand for upstream speeds in excess of 40Mb or upstream/symmetric speeds in excess of 16Mb.

## Operational Pilot and Deployment 'Trials' Scope

Openreach is proposing to run the following to test the technology, operational processes and systems and market interest for a GEA / FTTC product:

- Prior to the 'Operational Pilot' launch of the product, earlier in 2009 we will offer CPs the chance to interface with the Openreach network and Portal order interface in a test/ trial environment at Foxhall, near Ipswich, Suffolk).
- The 'Operational Pilot', targeted to start in Q2 2009/10 will be two defined geographic areas of Muswell Hill, London and Whitchurch, South Glamorgan. This will focus on approximately 30-40 cabinets (to pass in the order of 15,000 homes) in each area with up to 30,000 homes passed in total. This will test the initial Openreach and CP product network solutions and operational processes in an agreed live service location and where possible to begin to assess commercial market interest.
- Following a successful Pilot (positive evidence of technology used and potential commercial market interest), we may look to enhance the product offering (see 'Future Enhancements' section of this document) and the ordering systems solution to be able to support a bigger 'Market Deployment' phase (in the order of 500,000 homes passed).

## Pricing / Market Take-up

As overlay to existing WLR/MPF products (which includes an element of rent for the copper pair), the price for GEA / FTTC will be separate from the payments made by CPs for these other products. We propose that the price for GEA products will fall somewhere within a range of £5-£10 per calendar month (pcm). As a premium, faster service compared with SMPF, the prices of these products are in excess of the SMPF price.

The GEA product may be able to be ordered on a 'xMPF' basis or independent from base-band voice (see *GEA over FTTC – Product Proposal Overview* section for more details). These are optional models and are not currently confirmed to be available in the Pilot phase. In either case, the appropriate commercial model will need to be assessed with CPs in Industry forums.

Openreach is keen to hold further dialogue with CPs to develop views on pricing for all of these options further and to agree appropriate business models that can be established.

Openreach is keen to consider commercial arrangements to encourage CP take-up of the product. We are keen to explore other Investment Models suggested by CPs (shared investment and upfront payment models etc...) either through bi-lateral or industry wide discussion.

Other types of chargeable transaction anticipated are outlined below and prices for these will be made available in due course and reviewed within the NGA Product Working Group Industry Forums.

<b>Product /Event Type</b>	
<b>Provides</b>	<b>Modify, Cease, Amend, Cancel Charges</b>
GEA Connection Charge – New Provide	Service or Bandwidth regrades
GEA Connection Charge – Stopped Line Provide/Restart	GEA VLAN Routing Re-configuration
GEA Expedite Provide	GEA Cease charge
GEA Enhanced Provision	GEA Order amendment eg. Date or allocated CP equipment
<b>Transfer and Migration Charges</b>	Cancellation of GEA order
GEA CP Transfer	Standalone Shift of Network Termination Point
GEA Singleton Product Migration	Additional Network Termination Points
GEA Same CP Mass Migration charge	<b>Assurance Charges</b>
GEA Same CP Mass Migrations charge – Out of hours Monday – Saturday	GEA Standard line test – Right When Tested
GEA Same CP Mass Migrations charge – Out of hours Sunday	GEA Special Fault Investigation
<b>Head End Connectivity</b>	GEA Enhanced Care per annum
Connectivity Hand-over product	GEA Enhanced Care Plus on Demand

## Systems / Process

We anticipate that the service fulfilment and assurance processes for both the Pilot and subsequent wider Market Deployment, would be supported by an Equivalence Management Platform (EMP) interface (consistent with GEA over FTTP). We expect to make a portal interface available for the pilot phase and a full B2B interface available as a post-Pilot enhancement for wider market roll-out in 2010.

The systems ordering interface will offer the appropriate range of order services including: Provision, Modification (of product variant), Transfer (ownership of circuit between CPs), Cessation (of service) and where appropriate, migration from and to other Openreach (LLU) products. Fault reporting facilities would be a similar standard facility.

The following 'Dialogue Services' (or suitable alternatives) will be offered to support CP pre-order validation or aspects of service ordering and fault diagnostic processes:

- Geographic Availability Checker
- Appointing
- Address Matching

- Pre-validation of orders (port availability)
- Product bandwidth variant availability checker \*
- Service Test and Diagnostics of the e2e GEA / FTTC components

\* Where possible, this should confirm that at least the lowest GEA bandwidth product variant and link with LLU product dialogue services to offer alternative options of service from the LLU product range in the event that the line cannot support the minimum GEA product.

Keep Customer Informed (KCI) responses would be provided on both fulfilment orders and faults reported into Openreach.

## ***Service Migration (and activation)***

Processes to manage customer migration from existing LLU or LLU-based products to GEA over FTTC and return migration processes will be available for the initial pilot.

Openreach recognises the importance of simplicity in migration processes, minimising service impact and protecting CP and end users in having the most appropriate migration solutions available. We are therefore committed to progress dialogue on this issue for FTTC with Industry to determine the most workable solutions. Openreach intends to work with industry to define the required migration scenarios that meet the interests of all these stakeholders.

Service migration and activation will require engineer 'jumper' activity in both the exchange and in the cabinet to apply (and remove) the appropriate connections. This activity is likely to rule out truly 'seamless' migrations for the pilot phase, and for the foreseeable future. Active switching components in the cabinet could in theory address this, but would increase overall cost of service and would be reflected in an increase to the product price. It would also increase potential for insertion loss on individual circuits and risk of faults. We therefore aspire to minimise migration impacts within the constraints imposed by having to carry out the connection activities in the cabinet and in the exchange.

Activation of service or service transfers between CPs that involve migration from existing LLU products are complex processes and so to minimise the impact to the end user it will benefit all CPs if the cessation of existing CP provided services and the provision of new GEA / FTTC based service can be targeted at a precise engineer attendance time-slot (ideally 2 hours). The process solution will require Openreach and CP co-ordination, which owing to the primary need for the Openreach engineer activity we propose will need to be controlled by Openreach.

The CP is responsible for connecting its own CPE to the VDSL2 Modem, however, Openreach would like to offer a Managed Install product to arrange this work on behalf of the CP to minimise the number of engineer visits to the premises and ensure a good customer experience can be delivered. This capability from Openreach will only be available for the period that the product needs to be 'engineer install' and so when the service installation is optimised (with Self Install SSFP component and the integration of VDSL2 modem functionality into other components), this installation process will become simpler for the CP to manage.

Openreach envisages that two-way migration will be necessary (for customers wishing to move from LLU (SMPF/MPF) products and to return if required).

## **Regulatory Framework**

Universal Service Obligations (USOs), where applicable, can still be met through the availability of WLR voice service over the existing copper network.

Any services subsequently launched by Openreach are intended to be provided to CPs and to downstream BT equally.

The GEA / FTTC product will be developed reflecting the appropriate regulatory requirements. As part of the consultation, Openreach will work with Ofcom and industry to establish an appropriate regulatory regime for NGA during the Pilot and longer term Market Deployment.

## Process for GEA/FTTC Development and Roll-out

This process is published to clarify how Openreach proposes to work with CPs to encourage maximum co-operation and establish their preferred level of engagement around the development of the pilot GEA/FTTC product. Openreach's objective for GEA / FTTC is to develop an efficient and effective product that meets the needs of CPs and their end users. We aim to do this whilst balancing the demands on our organisation, recovering our costs and making a reasonable financial return on our investments. The process as set out in previous issues of this document outlined below summarises how we would intend to work productively with our customers to achieve this aim.

1. Following initial bi-lateral meetings and receipt of CP responses to this document, Openreach will publish a revised Product Proposal document [this document] and a Consultation Summary Report documenting the summary of customer responses to the proposal.
2. Openreach will invite CPs that have responded to participate in further development dialogue through additional bi-lateral and multi-lateral sessions (this is ongoing and the multi-lateral Open House event on 14-15<sup>th</sup> October was part of this).
3. Following this phase a refined version of the product and details of the process for engagement in the Pilot phase will be issued. This will be communicated to CPs for further input through :
  - Open forum.
  - Bilateral approaches from Openreach to CPs
4. Interested parties will then be invited to participate in full product development of GEA / FTTC in readiness for the Pilot and help to determine the demand-led rollout model:
  - a. Such activity will be subject to a mutual agreement covering appropriate levels of non-disclosure and protection of the development and intellectual property as deemed necessary.
  - b. This will also be subject to a commitment of adequate resource from each party for participation in pre-launch technical trials.
  - c. Openreach will make available resources to support CPs' end to end internal trials if desired, with appropriate confidentiality.
  - d. Commercial model development will form part of the work streams for the Pilot phase.
  - e. A Steering Group, chaired by Openreach, will enable all participating CPs to address complex issues in closed forum.
5. During the Pilot phase Openreach will update industry on progress of the Pilot on a regular basis through open forum and will invite further views on detail of the demand-led rollout model by written submission, which will be followed up in bilateral discussions.

6. On completion of the Pilot and a suitable period of assessment and if necessary further consultation, Openreach will publish the finalised product specification subject to retaining any information considered commercially sensitive.
7. Early adoption of GEA / FTTC will be considered via commercial models that favour early volume commitment and potentially front loaded payment structures. These will be offered to all CPs subject to NDA commitment.
8. The formal commercial model for roll-out to be published (i.e. requirements for demand trigger to stimulate rollout):
  - a. Transparency to be balanced with commercial sensitivity concerns.
  - b. Actual plans for rollout to be communicated to committed customers and those under NDA only.

## Document Control:

This document is uncontrolled once printed. All comments and change requests should be directed to the author.

Issue No:	Date:	Author / Editor:	Details of Change:
Draft 0.1	12 <sup>th</sup> August 2008	Andrew Sheppard	Initial draft
Draft 0.2	14 <sup>th</sup> August 2008	Andrew Sheppard	Updated following internal feedback
Draft 0.3	15 August	David Campbell	Updated following further internal feedback
Issue 1.0	18 August	David Campbell	Issued to CPs
Draft 1.1	7 <sup>th</sup> October	Dave Jones	Updated to include input from CP responses to consultation document
Draft 1.2	14 <sup>th</sup> October	Dave Jones	Updated to include input from CP responses.
Draft 1.3	17 <sup>th</sup> October 2008	Dave Jones	Updated to incorporate output from CP Open House.
Issue 1.4	21 <sup>st</sup> October 2008	Dave Jones, Andrew Sheppard	Issued following internal review

## GLOSSARY

Abbreviation	Full Name
ADSL	Asymmetric Digital Subscriber Line
ATA	Analogue Telephone Adapter
BT	British Telecommunications plc
CP	Communications Provider [BT]
DSL	Digital Subscriber Line
DSLAM	Digital Subscriber Line Access Multiplier
FTTC	Fibre To The Cabinet
FTTP	Fibre To The Premises
GEA	Generic Ethernet Access
GPON	Gigabit Passive Optical Network
KCI	Keeping Customer Informed
LLU	Local Loop Unbundling
LLUO	Local Loop Unbundling Operator
MPF	Metallic Path Facility

<b>Abbreviation</b>	<b>Full Name</b>
MSAN	Multi-Service Access Node [BT]
NTE	Network Termination Equipment
NGA	Next Generation Access
ONT	Optical Network Termination
PATS	Publicly Available Telephony Service
PCP	Primary Connection Point
PIR	Peak Information Rate
PoH	Point of Handover
PON	Passive Optical Network
PSTN	Public Switched Telephone Network
SMPF	Shared Metallic Path Facility
SIP	Session Initiation Protocol
USO	Universal Service Obligation
VLAN	Virtual Local Area Network
WLR	Wholesale Line Rental