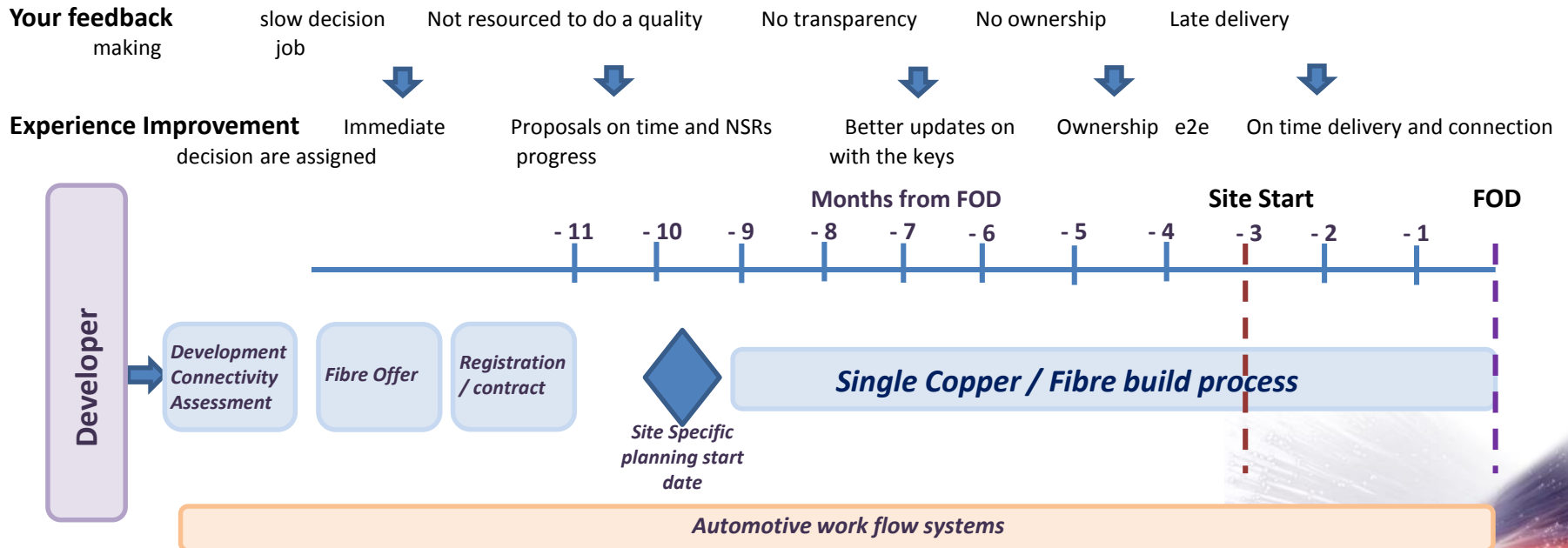


Donna Leeding
Openreach
Developer Relations
September 2015



Transforming the New Sites Developer experience

- Our vision is to provide improved delivery and choice of Fibre Broadband to you, our customers. We aim to:
 - Select with you, the best technology for your site and your home buyers
 - Know what Broadband speeds you can expect up front
 - Improve the communications and flow of information on our delivery progress
 - Your customers always have internet and phone access when they move in
 - When things are not going to plan you have a clear and effective escalation process which will deal with all your New Site queries
- To achieve this vision, we will be delivering short medium and long term changes
 - **Short term** – Online site registration, single UK 0800 number, streamlined escalation process (all in place)
 - **Medium term** – Development Connectivity Assessments (an upfront assessment of what ADSL speeds you can expect on a potential new site, and identifies the best Fibre broadband choice) Q4 15/16
 - **Long term** – Developer Portal – full online services, for pre-assessment, registration, onsite designs and tracking progress with your site (End 2016)



Recent Changes in the Process

Simplifying our processes – So far

- Launched the developer website – this is a tool for developers to help them deliver the infrastructure and to provide the right information to their customers
- Launched a single front door for all new sites related escalations, where issues will be case managed to resolution
- Launched revised handbooks, quality sign on/off sheets and contract to provide clarity on timelines and the quality standards required
- Simplified the front end reception for all registrations and enquiries on new sites, there is only one number to call and the registration forms can be found on line
- Working with HBF and NHBC to manage the new ways of working out to all developers, initial feedback has been positive to the changes.

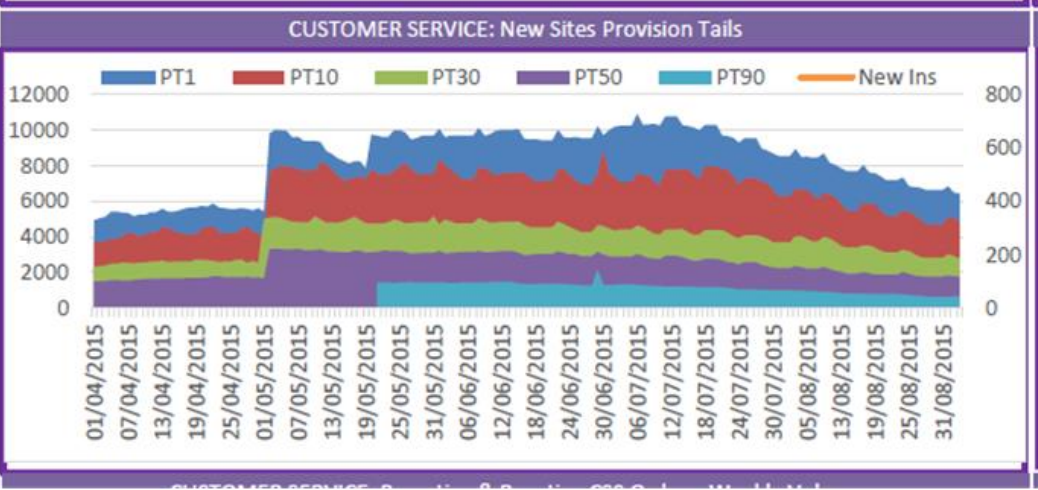
www.newdevelopments-openreach.co.uk or www.openreach.co.uk/newsites

Developer Engagement strategy

- Introduced Account / Service management approach for large developers
- Improved communications and engagement at both working levels and CEO levels to help shape our strategy and service
- Establishing a developer service forum (first forum 29th Sept), and a regular newsletter from October
- Utilising developer 2 year plans to inform capacity management and technology choices
- Driving better quality and compliance (for example, reducing late registration)
- Working with NHBC, to understand homeowner expectations and how much they value a home with SFBB



We're making good progress reducing the overdue customer orders – down 49.4% (54.1% excluding Validated Waiting Builder)



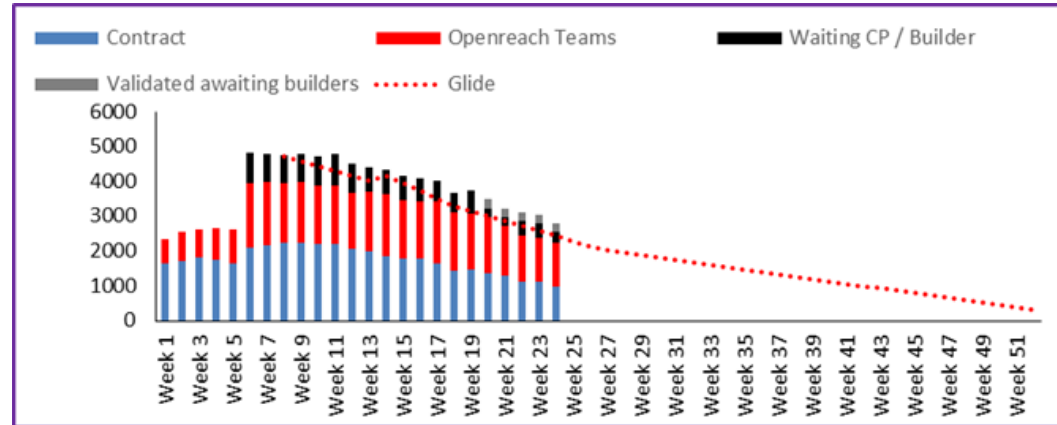
Total	PT1	PT10	PT30	PT50	PT90
3rd Party Contracts	1,786	1,508	986	637	242
Customer Service	854	515	231	122	46
ID Centre of Excellence	22	14	9	6	4
Infrastructure Delivery	946	786	474	278	83
Newsites Planning	1,335	702	286	160	55
Service Delivery	513	394	235	153	44
Waiting Builder (WBD)	596	501	339	231	114
Grand Total	6,052	4,420	2,560	1,587	588
Validated WBD			247		
Total exc Validated WBD			2,313		

- 39% of our aged tail is with external 3rd party suppliers. This has reduced from 2,176 to 986 orders (55%) and we're working hard to clear Civils backlogs off-site
- 13% of our aged tail is delayed 'waiting builder'. New Sites reps are validating each and every order. That has reduced from 15% of total.

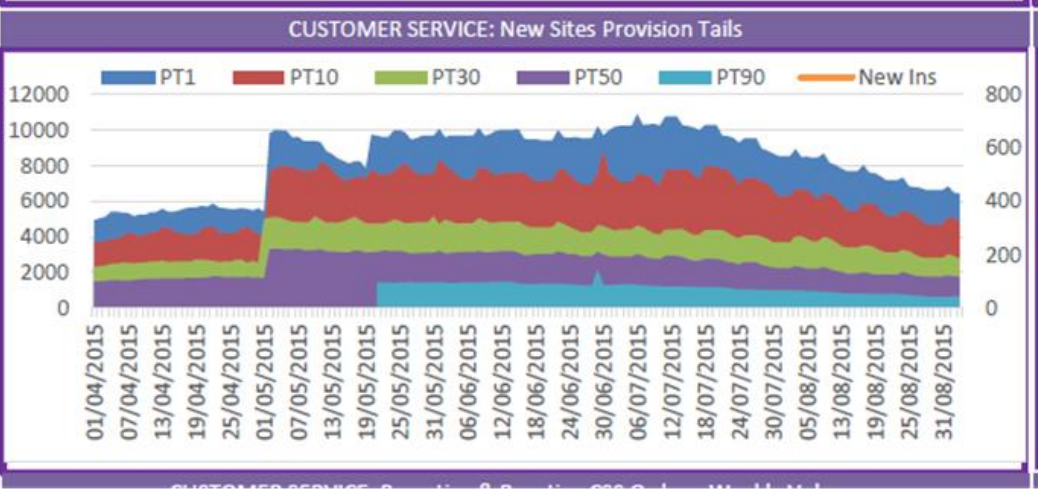
From Baseline (5/5)

Tail	Current	Baseline 5/5	Var	%
PT1+	6,052	9,962	-3,910	-39.25%
PT10+	4,420	8,182	-3,762	-45.98%
PT30+	2,560	5,056	-2,496	-49.37%
PT50+	1,587	3,285	-1,698	-51.69%
PT90+	588	1,545	-957	-61.94%

- The overall tail (overdue customer orders) has reduced by 39.25% since 5th May re-baseline.
- **The aged tail (30 days) has reduced by 49.4% (54.1% post validated waiting builder)**
- The significantly aged tail (90 days) has reduced by 61.9%



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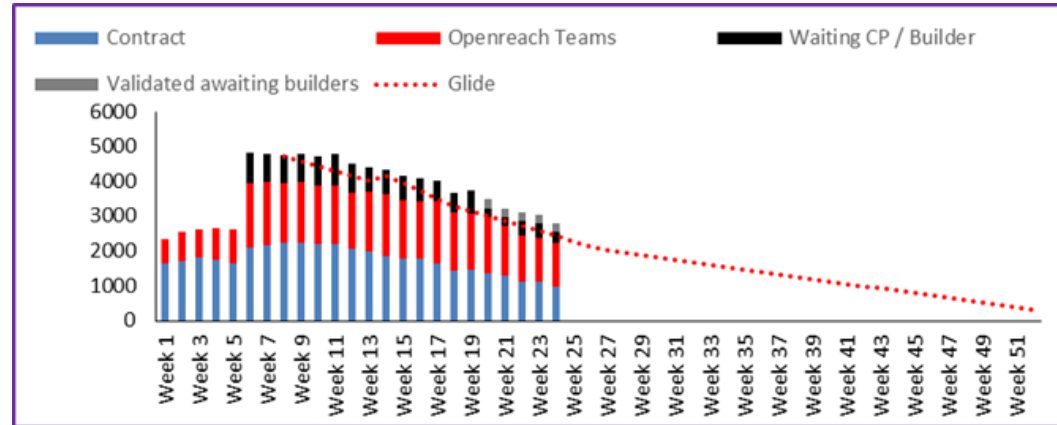
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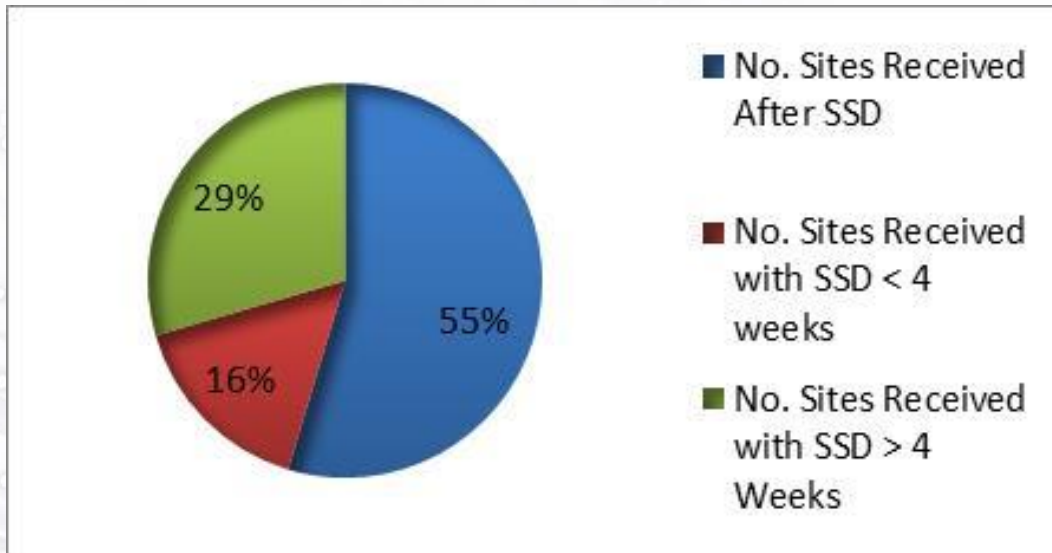
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Where you can help us to help you

Delivering transformation requires the recovery to come in on time and we need your help with registering your sites on time

- We are seeing a consistent c70% of all registrations late, with 55% of those being registered after you have started to build
- We have now changed the contract to move this back to 8 weeks and align with the NHBC registration timescales (i.e. 8 weeks)

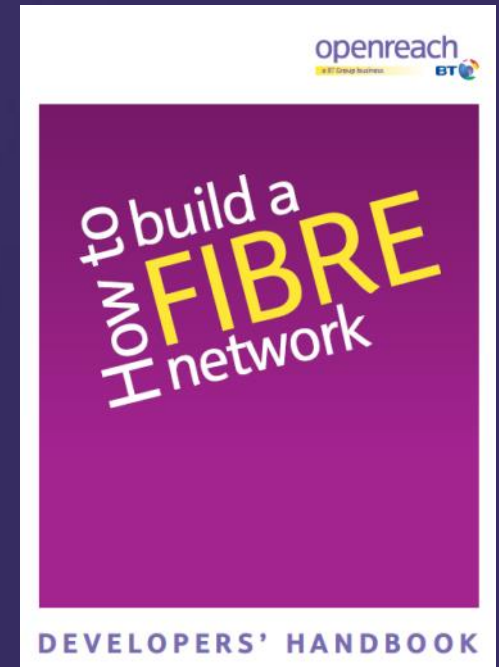


No. Sites Received After SSD	No. Sites Received with SSD < 4 weeks	No. Sites Received with SSD > 4 Weeks
2486	721	1340
55%	16%	30%

Chris Payne
Openreach



I would like to take you through the New Developers Guide for Fibre delivery and explain some of the rationale behind why we do and say what we do

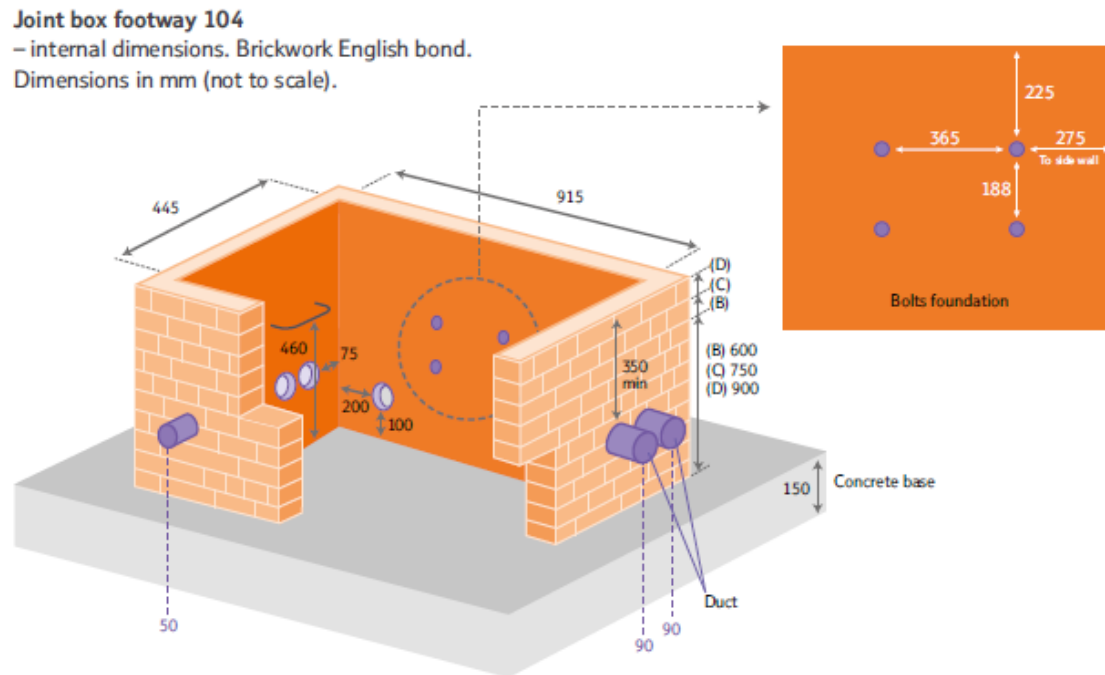


Information source

http://www.newdevelopments-openreach.co.uk/Download/9203_FIBRE_network-hbook-06-PHME75245.pdf

Starting with the Duct and Boxes

- Footway JBF04 and 06
 - No Changes to the build specification
 - When instructed to do so Drill 1 set of 3 holes using a 12mm masonry drill bit
 - We now use NO drill Mobra brackets so expect NOT to do so

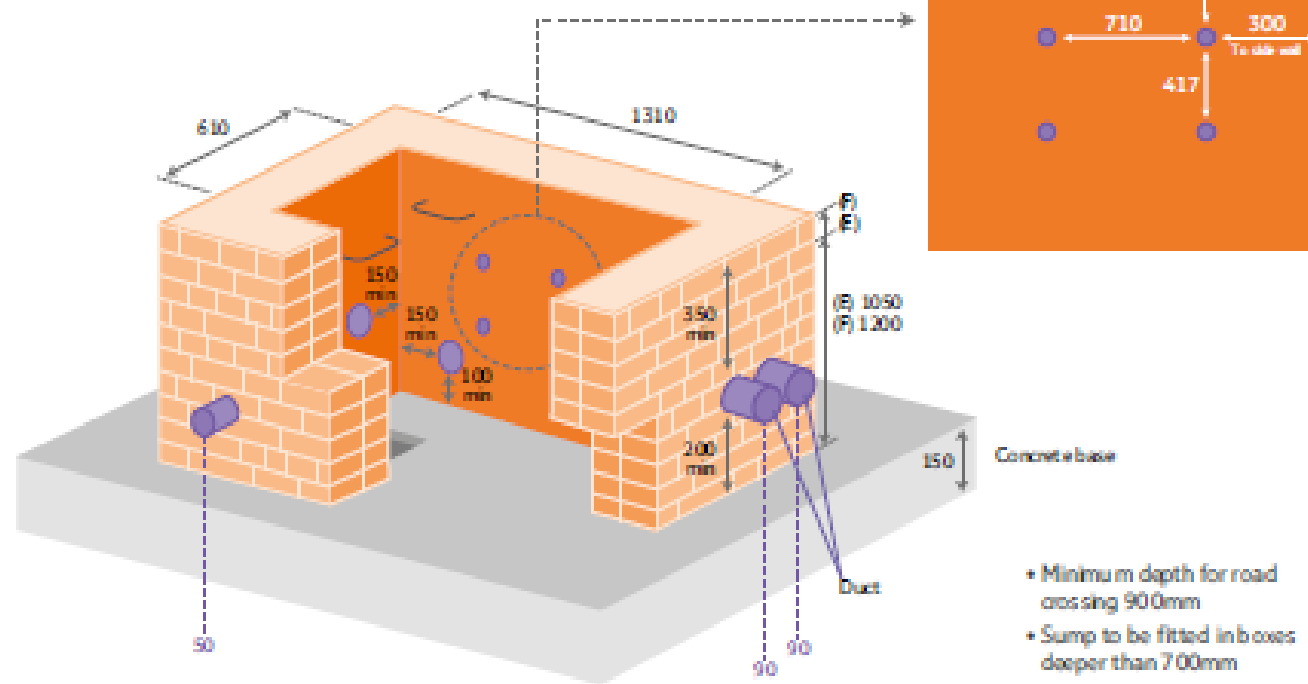


Starting with the Duct and Boxes

- Footway JBF 06

Joint box footway 106

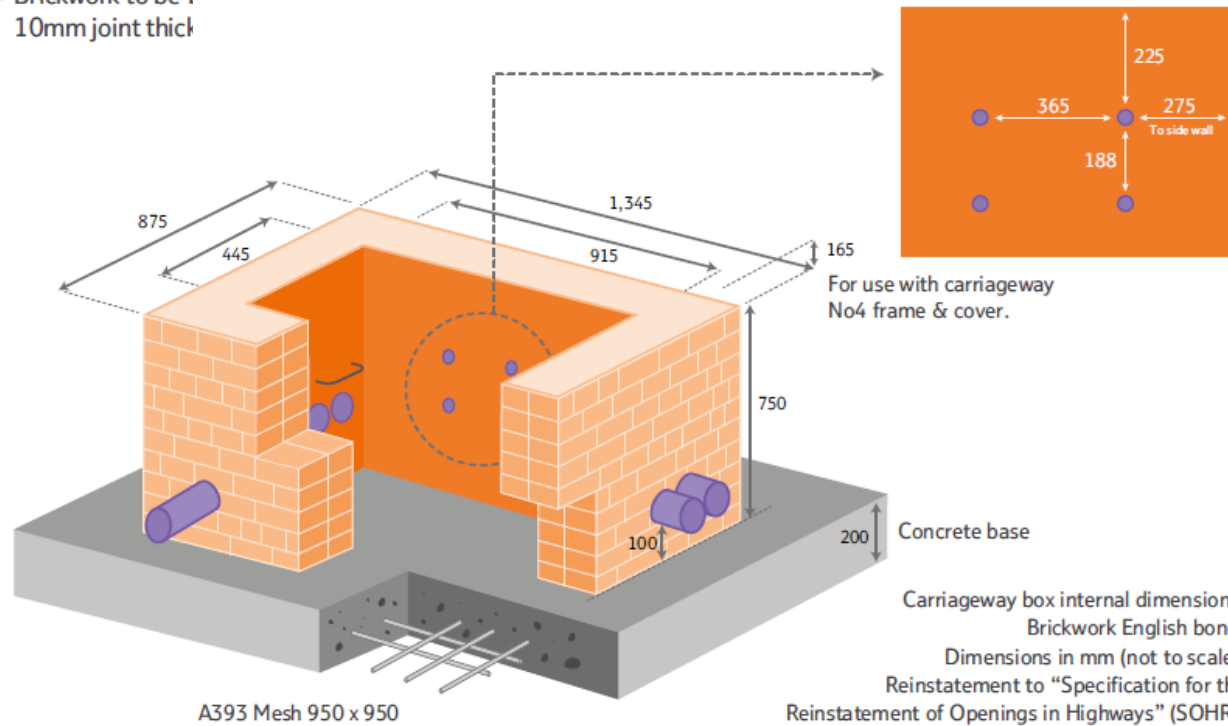
– internal dimensions. Brickwork English bond.
Dimensions in mm (not to scale).



Starting with the Duct and Boxes

- Carriage JBC04
 - No Changes to the build specification

- Brickwork to be 1
10mm joint thick



Starting with the Duct and Boxes

- Preformed Chamber Quad Box system
- It is NOT a free issue from Openreach but has to be purchased.
 - Approved for use in the Openreach network
 - Quad box pre-formed chamber system has benefits
 - Speeds up installation process
 - No specialist box building team
 - No concrete backfill
 - 102, 104 and 106 all approved to BT spec LN178



Starting with the Duct and Boxes

- Preformed Chamber Quad Box system
 - there are: ALSO QUALITY STANDARDS WE EXPECT!
 - duct entry MUST be made with CORE Drill
 - pre-marked for correct duct spacing
 - chamber requires clean and level concrete base to 150mm depth
 - Associated furniture must also be purchased as they fit to preformed fixing positions
- Available from <http://www.cubisindustries.com/>



Starting with the Duct and Boxes

Just because it is pre-formed please do not drill out everyone



We have components
to install



Starting with the Duct and Boxes



Starting with the Duct and Boxes

- Lids and covers are supplied by Cubis Industries and are the only BT approved supplier of these products
 - Available from <http://www.cubisindustries.com/>
- Our engineering work force will be unable to access if incorrect lids and covers are used
 - They are identifiable via the following markings: “EN124B125” the British Standards Kite marking the manufacturers mark (SID) the year of manufacture and the BT identifier
- Visual impact?
 - We have recessed covers available
- Security concerns?
 - We have lockable lids and covers available
- If in doubt talk to your NSR



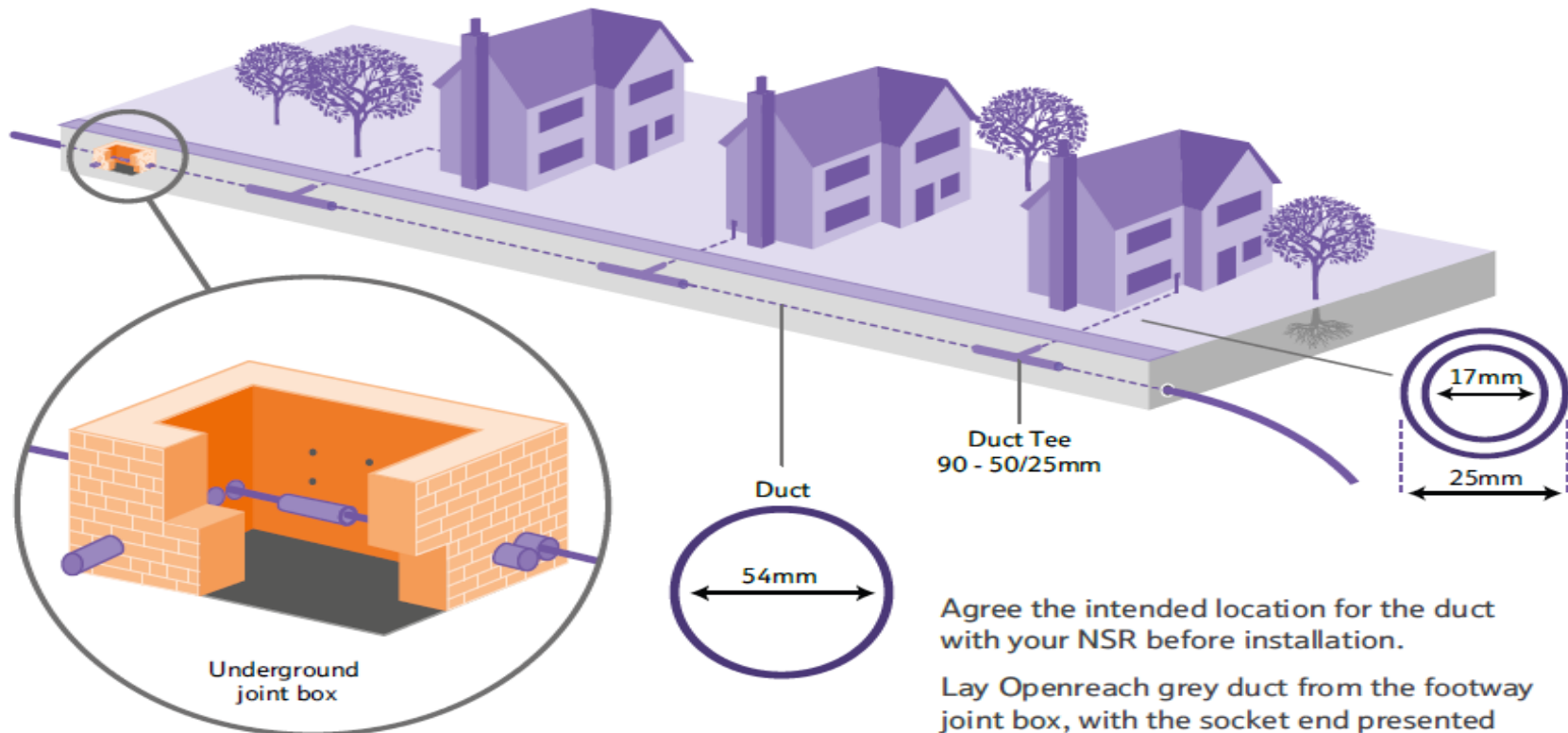
Starting with the Duct and Boxes

- Duct laying and standards
- We are fully compliant to the NJUG standards of depth for carriage way and footpaths.
- All duct lengths should be as straight as possible
- A draw rope should be installed unless agreed with your NSR to install a tube
- All debris and water should be reduced to the absolute minimum with tubes being capped
 - Delayed installation if debris and water are present in Fibre tubes
 - Shallow duct liable to be damaged?

Starting with the Duct and Boxes

- Duct presentation at the property

Installation for houses



Agree the intended location for the duct with your NSR before installation.

Lay Openreach grey duct from the footway joint box, with the socket end presented to the joint box and terminated with a 90° pre-formed bend on the outside of the properties wall.

Starting with the Duct and Boxes

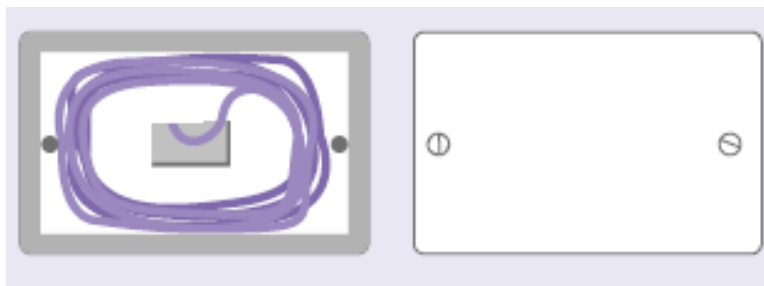
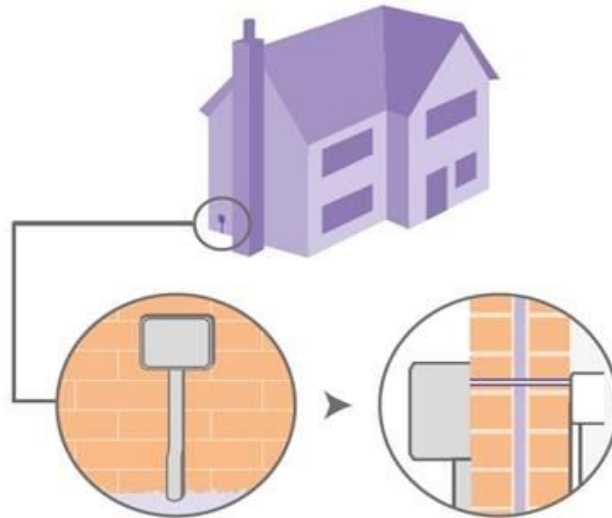
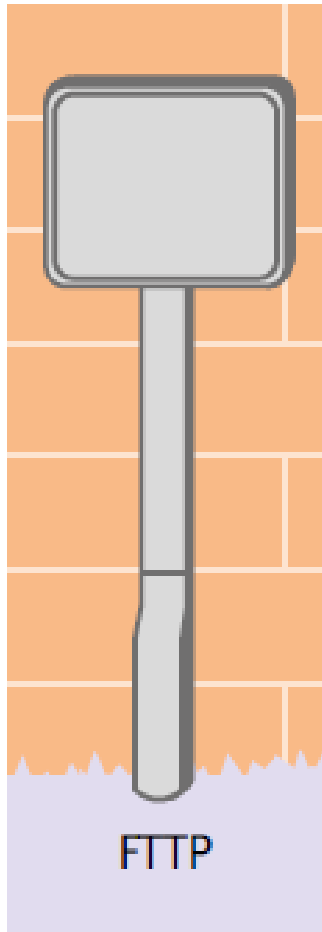
- Duct presentation at the property
 - Think about the position of the duct
 - Think about the internal network components
 - Think about access for future engineering team if issues arise
 - Think about cabling radius
 - Once fibre is broken then it is a BIG issue
 - Think about the Communication Providers network components
 - Think about the home wiring and the customer services and needs



Ian Chapman
Openreach
Chief Engineer team



Customer Lead-In

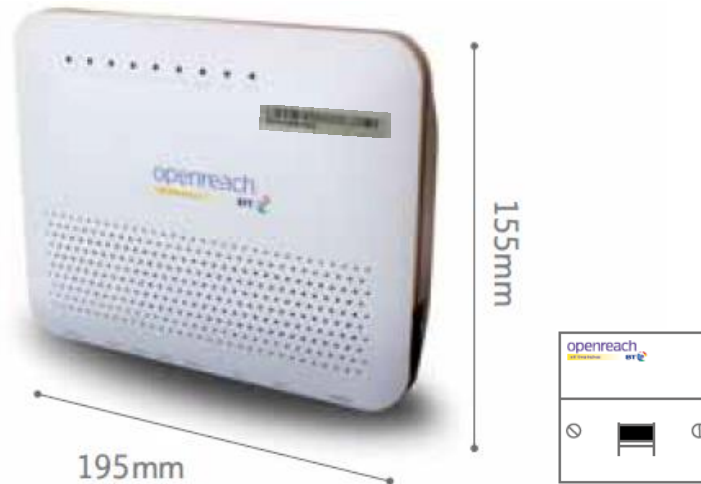


Wherever possible, the duct should be positioned to allow for the installation of the ONT on the opposite side of the wall, removing the need to run internal fibre cables.

Two metres of cable should be left coiled and housed/protected within a flush mounted double back box and faceplate ready for Openreach provision of CSP and ONT nearby.

Main internal components

Optical Network Termination (ONT)



Customer Splice Point (CSP)

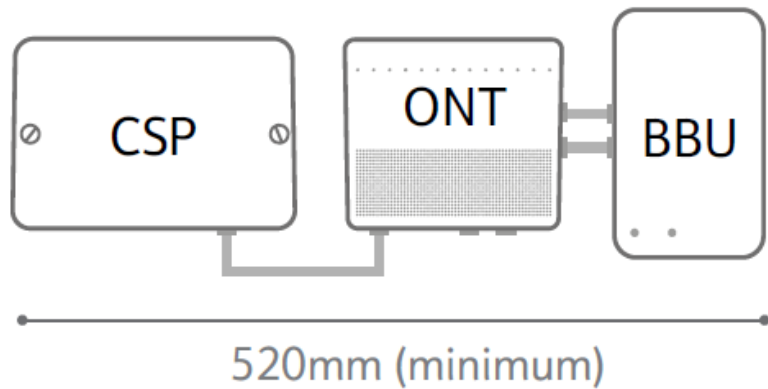


Battery Back Up Unit (BBU)

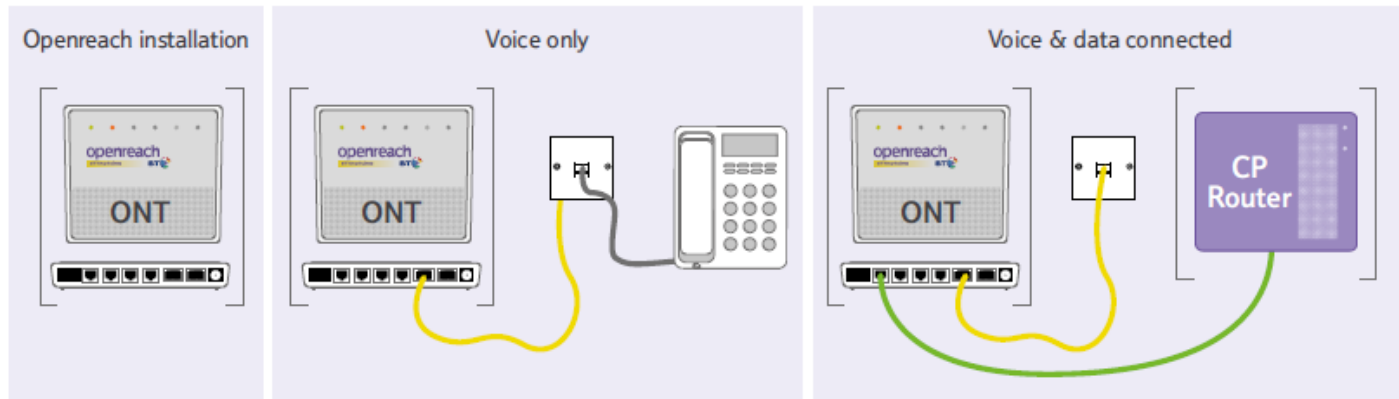


- Optical Port
- Ethernet Ports
- Telephony Ports
- DC Power Input

ONT and BBU positioning

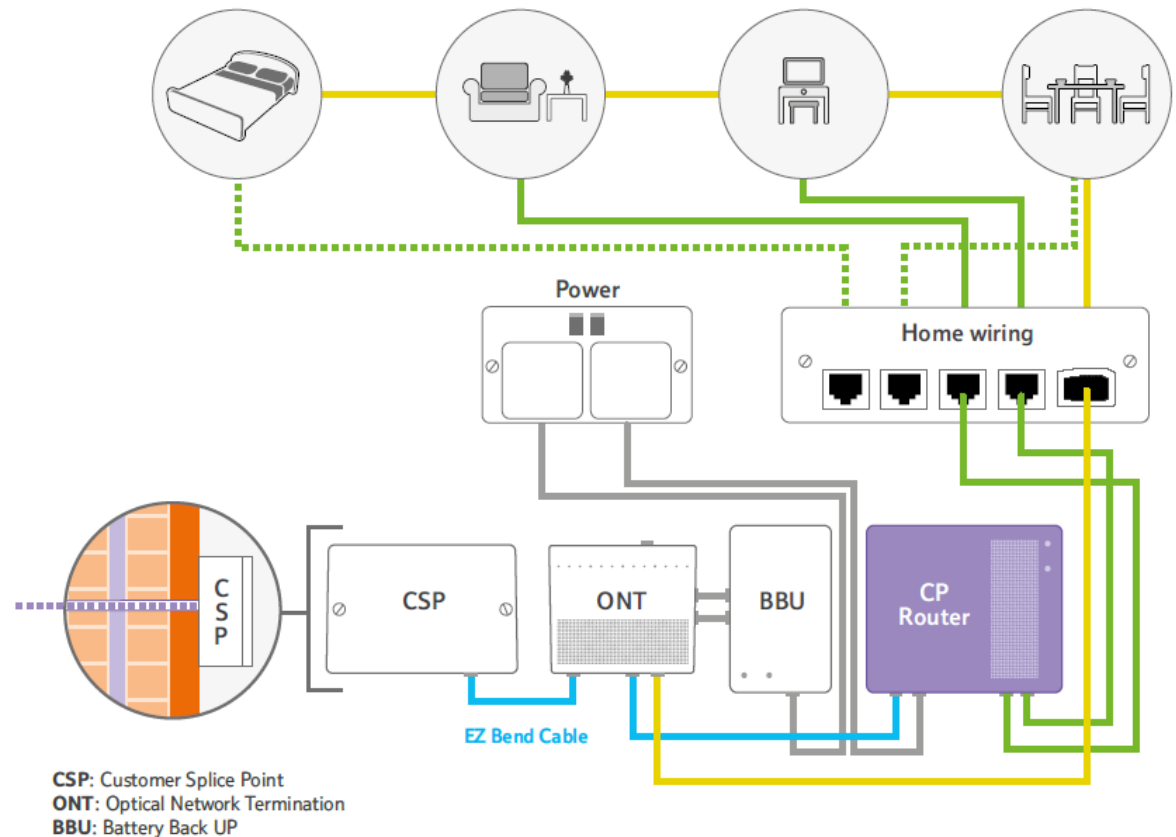


- Ideally aligned with height of power outlet(double socket).
- Aligned with Customer Splice Point (CSP).
- ONT must be accessible for both the home owner and Openreach Engineers.
- Requires unrestricted access to connectors.
- Please avoid fitting Openreach equipment in areas of high humidity e.g. kitchens and bathrooms.



Home wiring

- CP router can be either co-located or remote located from the ONT.
- Cat 5E or Cat 6 cable is recommended for the provision of data sockets fitted



Optional Prismian comms/hub box



Issues and impacts

ISSUES

Duct

- Service hole not off set from duct centre.
- Duct installed too shallow.
- Duct protruding too far from the finished wall surface.

Home Wiring

- EZ Bend cable too short or damaged
- Defective or damaged home wiring creating a fault on the line
- Extension sockets not connected to the Openreach ONT



IMPACT

Duct

- The capping and covers would look unsightly
- Delay in completion
- Failure to provide conduit can prevent a cable from being installed.

Home Wiring

- Inability for Openreach to provision service and developer requirement to re-provide EZ Bend cable
- Poor user experience for home purchaser

Access problems



Network futures



Future network requirements

Trends

- Ongoing c21% CAGR in data traffic
- Increasing consumer and business devices and data usage
- Increased convergence and bundling of services

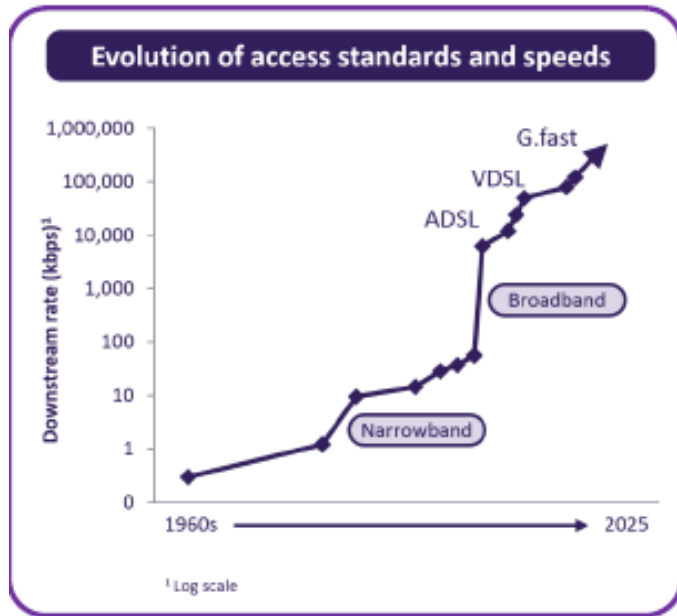
Demands upon the Openreach access network

Speed – meeting the constant increase in bandwidth

Quality – the ability of the network to support the applications at the right Quality of Experience (delay, jitter, error rate, retrains)

Delivery time – fulfilling the customer service requirement on time and right first time

Ultrafast broadband



- G.fast is at the heart of that vision.
- Ten year vision of up to 500Mbps available across most of the UK.
- Premium 1Gbps fibre broadband services for high-demand customers.

BT Press Releases

DC15-035

30 January 2015

BT CEO sets out ultrafast broadband vision

***“G.fast” to deliver speeds of up to 500Mbps to most homes
Premium fibre services of up to 1Gbps to be developed***

BT CEO Gavin Patterson today set out the company’s ambition to transform the UK broadband landscape from superfast to ultrafast.

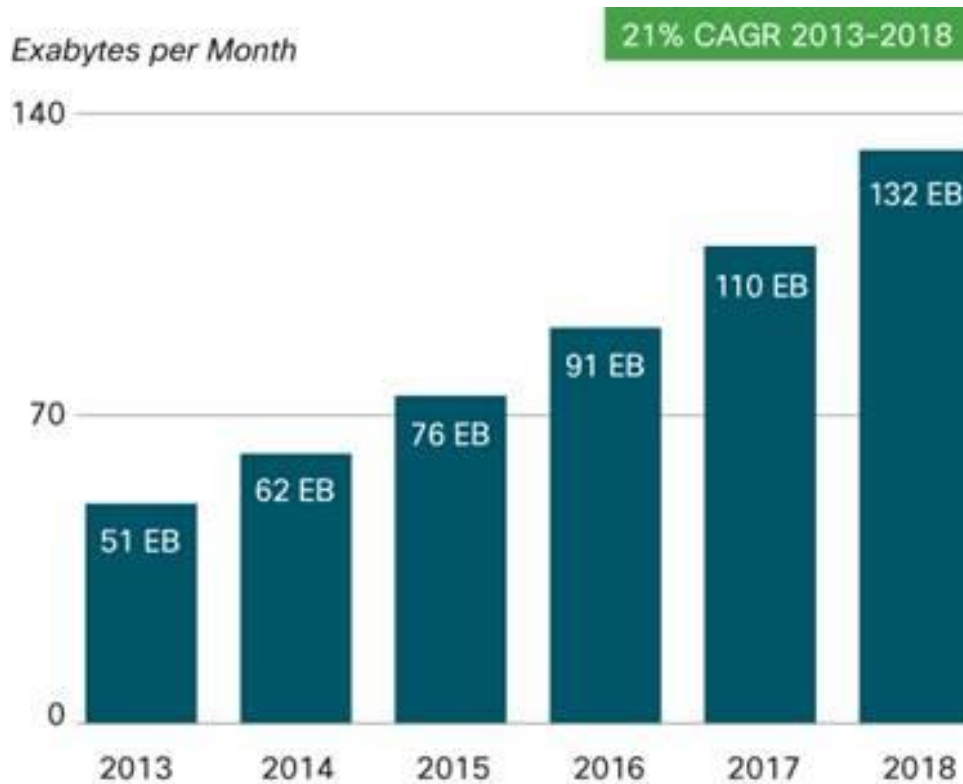
He revealed that BT plans to deliver much faster broadband for homes and small businesses via a widespread deployment of “G.fast”. This is an innovative technology that BT will test in two pilot locations starting this Summer.

G.fast will help BT deliver ultrafast speeds of up to 500Mbps to most of the UK within a decade. Deployment will start in 2016/17, subject to the pilots being successful.

Early tests show G.fast is capable of delivering a range of speeds depending on how close the technology is to a customer’s premises. BT expects to offer initial speeds of a few hundred megabits per second to millions of homes and businesses by 2020. Speeds will then increase to around 500Mbps as further industry standards are secured and new kit is developed.

“BT is a world leader when it comes to fibre innovation and we are excited about the next stage in our story,” Patterson said today. “We believe G.fast is the key to unlocking ultrafast speeds and we are prepared to upgrade large parts of our network should the pilots prove successful. That upgrade will depend however on there continuing to be a stable regulatory environment that supports investment.

Content continues to grow exponentially



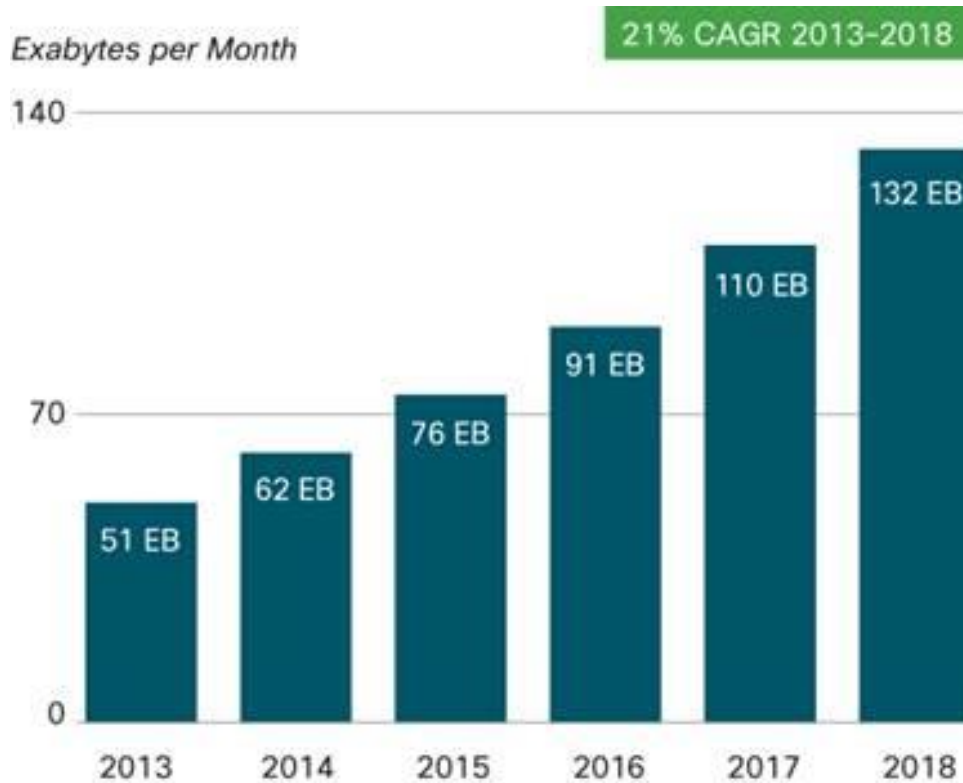
Source: Cisco VNI, 2014

Cisco VNI Forecasts 168 Exabytes per Month of IP Traffic by 2019

Consumer: iPlayer, 4oD, YouTube, Spotify...
Ongoing debate regarding who should pay for delivering content.

It would take over 6 million years to watch the amount of video that will cross global IP networks each month in 2016

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Summary

- **Background to fibre delivery and rationale**
 - Ducts, boxes
 - Internal components
- **Issues and impacts**
- **Future network requirements**
 - Trends / customer demands
 - Ultra fast broadband

Questions?