

AVIRE

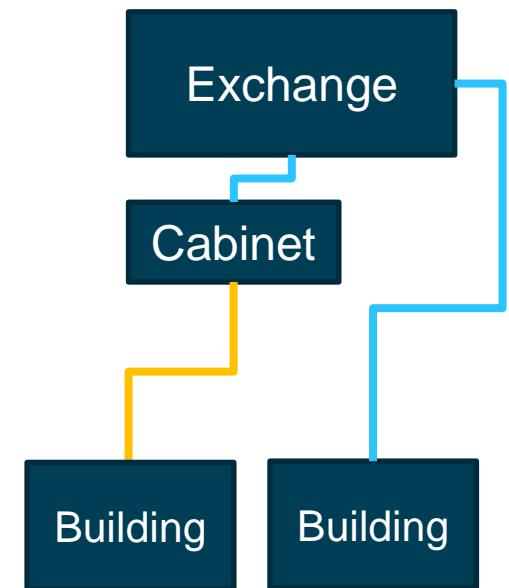
ANALOGUE TO FIBRE

April 2019

Matt Davies – ELA Tele-Alarms Working Group Member

PUBLIC SWITCHED TELEPHONE NETWORK (PSTN) AKA LANDLINES

- **PSTN originally built on copper cables**
 - Digitalisation of the network began in earnest in the 1980s
 - Switch from copper to fibre optic cable began in the 1990s
- **FTTC = Fibre To The Cabinet**
 - “Last mile” is still copper
- **FTTP = Fibre To The Premises**
 - BT Openreach deploying since ~2012 in parallel with copper
- **Fibre network continues to simulate an “analogue line”**



PSTN – OPENREACH ‘FIBRE FIRST’ PROGRAMME

- **Nov 2016 – 99% of new constructions with 30 or more units built as FTTP**
- **April 2018 – Copper no longer automatically installed for new construction**
 - **1st Wave: Birmingham, Bristol, Cardiff, Edinburgh, Leeds, Liverpool, London, and Manchester**
 - **2nd Wave: The Wirral, Exeter**
 - **3rd Wave: Belfast, Nottingham**
- **Nov 2018 - 682k premises served by FTTP**
 - **Up from 500k in Jan 2018**

PSTN – OPENREACH ‘FIBRE FIRST’ PROGRAMME

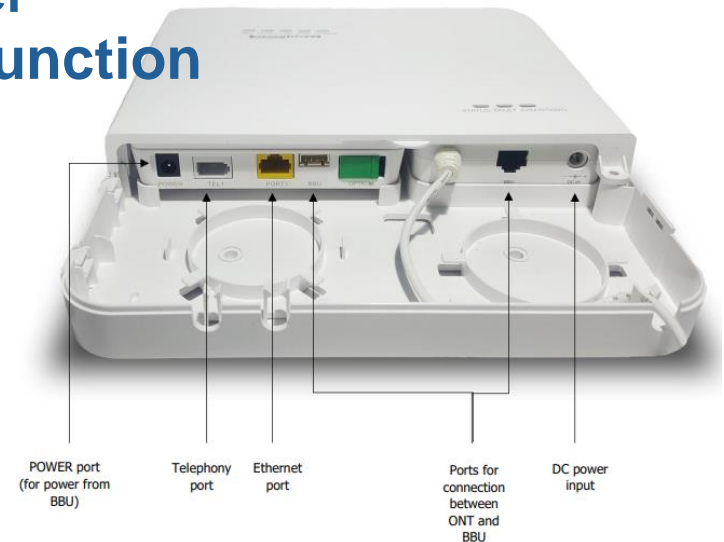
- **Jan 2019**
 - **4th Wave:** Bury, Barking & Dagenham, Bexley, Croydon, Greater Glasgow, Harrow, Merton, Redbridge, Richmond upon Thames, Sutton Coldfield, and Salford
- **Mar 2019**
 - **Salisbury ‘full fibre’ (FTTP)**
- **Potential for Openreach to now charge per line for laying copper (~£10k-£15k) into new construction**
- **Some areas already unable to lay new copper as a new exchange and head end would be required**

PSTN – OPENREACH ‘FIBRE FIRST’ PROGRAMME

- **End of 2020 – 3 million premises served by FTTP**
- **End of 2025 – 10 million premises served by FTTP and active copper recovery begins**
- **2033 – FULL FIBRE**
 - **‘This will involve customers moving onto new fibre networks and retiring the legacy copper networks. Running copper and fibre networks in parallel is both costly and inefficient.’**
‘Future Telecoms Infrastructure Review’ July 2018, Department for Digital, Culture, Media & Sport
 - **Active copper recovery begins in France this year**

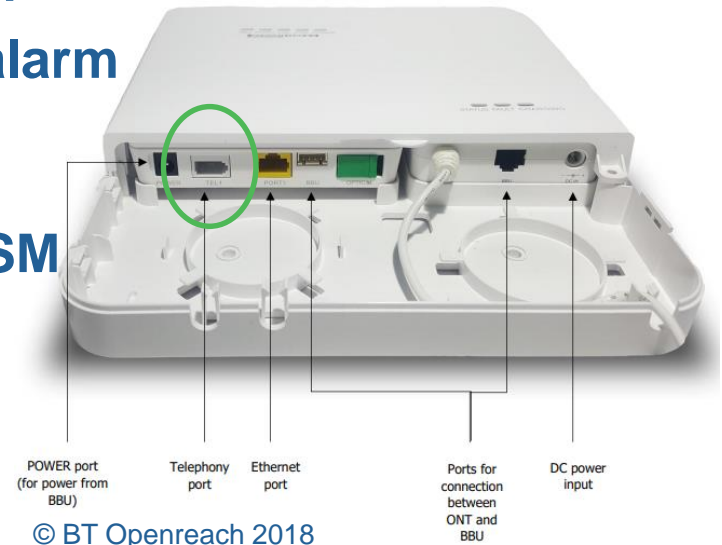
PSTN – OPENREACH ‘FIBRE FIRST’ PROGRAMME

- Fibre doesn't carry voltage...
- Optical Network Termination (ONT) point
 - 1hr talk time per Ofcom requirements
 - Monitored battery backup
 - Battery fault alerts to BT
 - New battery = Building owner's responsibility
- Line power devices will need power suppliers installed to continue to function



PSTN – OPENREACH ‘FIBRE FIRST’ PROGRAMME

- **Active copper recovery from 2025 and end of support for DTMF (analogue) signalling**
 - Analogue ports will be removed from ONT
 - End of support for DTMF will impact the vast majority of installed emergency telephones which rely on DTMF signalling to communicate
- **Australia went through this in 2020/21**
 - Huge disruption to the lift and fire alarm industries
 - Lift emergency telephones now almost exclusively connected to GSM



PSTN – OPENREACH ‘FIBRE FIRST’ PROGRAMME

- **Potential solutions to support existing installs**
 - Provisioning of Analogue Telephone Adaptors (ATAs); simulates a analogue line, used today for building IP phone systems
 - Move to a cellular device (e.g. GSM/GPRS) with DTMF to Data conversion capability, already being used in the market to avoid DTMF issues over the mobile networks

MOBILE NETWORKS

- **2G/3G/4G/5G/?G**
 - 2G (GSM/GPRS) introduced in 1993
 - 3G (UMTS) introduced in 2003
 - 4G (LTE) introduced in 2012
 - 5G (NR) to be introduced ~2020

- **Yes there was a 1G (TACS)**
 - Introduced in 1983
 - Used analog radio signalling
 - Completely replaced by 2G



MOBILE NETWORKS

- **2G shutdowns?**
 - Consumer mobile has moved away from 2G due to increased data demand
 - Best coverage and most devices on network
 - Cost of deployment for new technologies in “rural” areas unlikely to be covered by increase in consumer mobile revenues
 - Machine2Machine (smart meters, etc.) is built on 2G and isn’t as data hungry as consumer mobile
 - France (Orange) announced a 2019 shutdown and then cancelled
 - Australia and Switzerland began their 2G shutdowns in 2016/17. US networks began shutdown in 2017

MOBILE NETWORKS

- **3G shutdowns??**
 - More likely...
 - 3G lags behind 4G in terms of data speed
 - Has poorer nationwide coverage than 2G
- **4G**
 - Lacks a voice channel; voice is carried over 2G or 3G infrastructure
 - May be overtaken by VoLTE/5G technology as this will have a voice channel
- **5G**
 - 1st phase specifications to be completed by April 2019 to accommodate the early commercial deployment.
 - 2nd phase due to be completed by April 2020

SUMMARY

- **Traditional copper landlines are dead**
- **2025 - DTMF support to be removed and copper recovery begins**
- **Understand the equipment you have installed and what options you have for updating the communication means; ATA or GSM**

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ANY QUESTIONS?

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