Ready for the PSTN Switch Off, these are the outlines of the options available when moving from analogue lines to VoIP

1   The simplest option for basic home users is to stay with their provider and just allow the analogue line provider to transition your PSTN number to their VoIP provision.   This may be the simplest, but is not the best value for money and will not provide many features – OK for the most basic requirements.

For example BT will automatically move your PSTN number to one of their BT Digital Voice packages.   They will supply a new Internet router with a BT type analogue socket on the back so you can connect your analogue telephone. Once their system has seen your telephone connect via the router, it will come alive on the BT Digital Voice service.   You can connect multiple handsets to the router using a DECT system or legacy POTs, but you will be limited to a single concurrent call and single number. The features available will be very limited and monthly charges will be between £7 and £15 per month {depending upon the chosen call package} plus the Internet monthly fees and you will be locked in to the contract for at least 24 months.

vDSL connection to BT

analogue phone

wired home network
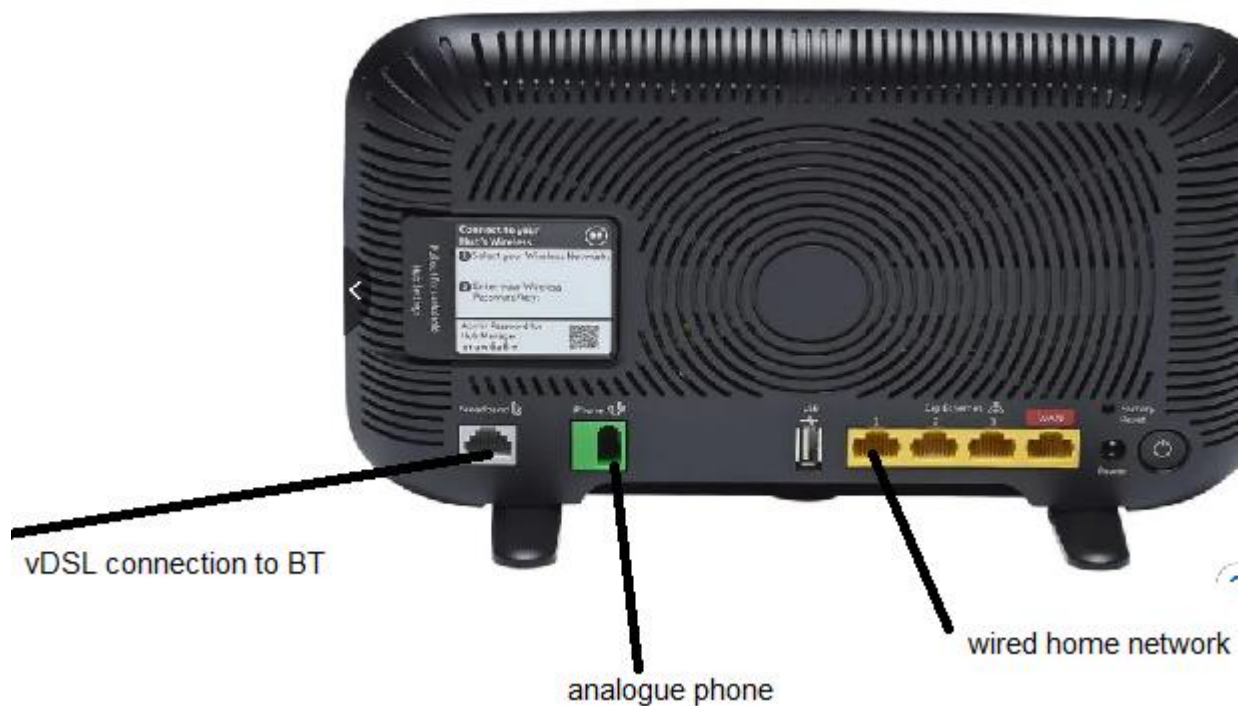
NOTE – the BT Hub2 is also available from EE and PlusNet in their colours, but it is the same router made by Sagem and provides WiFi for the home and very basic functions {it does not support routing – even static routing can not be configured and it routes all SIP traffic to the inbuilt ATA and the analogue telephone socket, so SIP support outside of the router is difficult}

Although BT and PlusNet refer to this package as 'fibre connected', it is not directly fibre connected – it still uses vDSL for the 'last-mile' to connect to the router from the FTTC or FTTP termination etc.

The WiFi provides just a single 2.4GHz radio {no 5GHz or 6Ghz support} and they often refer to the router as a 'smart hub 2' – quite wrong use of the work 'smart' with very limited configuration options.   They do offer a 'smart hub 4 or 5' which can provide two WiFi radios {2.4GHz and 5GHz}, but tests show there are issues with some Apple, Android and Xbox connectivity and the options for configuration are still very limited.

In tests, the Sagem router usually trains up to the vDSL line about 10% to 20% slower than a quality router such as a Cisco 897 etc.   However the Sagem router is free with your Internet provision, so you tend to get what you pay for.

The Sagem does not provide termination for VPN, so it is not an option to login to your alarm, CCTV or heating systems etc. while away from the home without additional products and/or accounts etc.

2 Small Business Home Business users will tend to require more features

{several simultaneous calls, multiple telephone numbers, multiple telephones with configurable routing, remote access, voicemail, music on hold etc…}

It is possible to use the existing BT Hub2 or similar router, but it severely restricts routing and functionality. The most cost effective way is to replace the provider supplied router with a quality router {available either new or refurbished or second hand etc. from as little as £30 from eBay, up to several hundred for high bandwidth routers etc.}, this provides a higher speed Internet provision, VPN and encryption features and supports VoIP either via a cloud provider or on-premises systems depending upon the features required to match any budget.

In the simplest configuration – a router can be installed in place of the provider router, connection then made to a DECT telephone system which allows upto 6 SIP trunks {each with a different telephone number} with 6 handsets within the home/office all with their own extension number.   Calls can be configured to route to the required handset based upon inbound callerID and/or inbound called number.   Calls can be routed to voicemail or out to smartphone or cellphone as required.   Dialplans can be configured to decide which telephone number is used to make outbound calls through any of the connected trunks.

VoIP DECT systems available in different styles and colours, as basic, complex, ruggedised and large button versions to suit all requirements.   Up to six handsets per base and up to 6 VoIP SIP trunks to VoIP providers to support up to six external telephone numbers per DECT base. Internal calls are direct and free.

Back panel
of the base

front view of DECT base
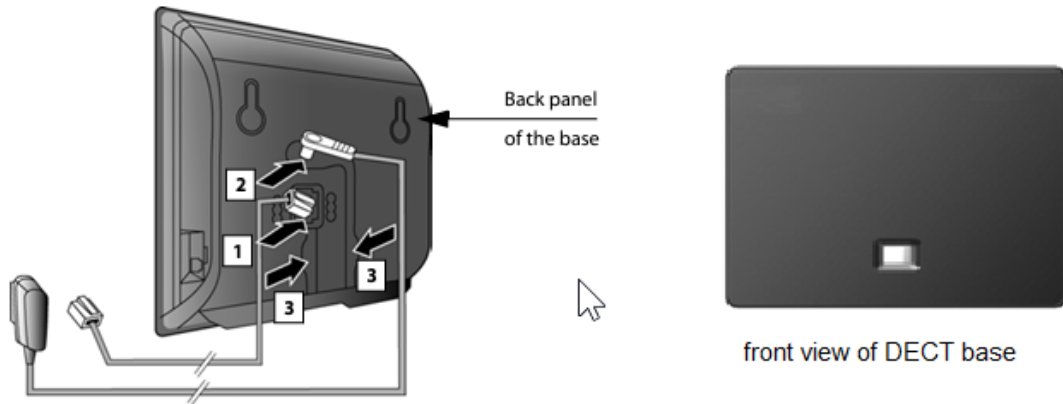
Allows connections to old analogue lines 1, power supply 2,
Network connection to the router 3

Average cost of DECT handsets approx £ 90 each including the DECT base.

DECT has a good range from the base units of about 50m indoors and >300m outdoors. DECT {Digital Enhanced Cordless Telecommunications} is designed for voice and is very energy efficient and uses 24 encrypted time slots over 1900MHz supporting HD Voice, low battery drain and plenty of features.

Basic SOHO configuration example

WiFi connected
PCs and phones

DID
external
telephone
numbers

Internet

ITSP

DECT

main router and
firewall
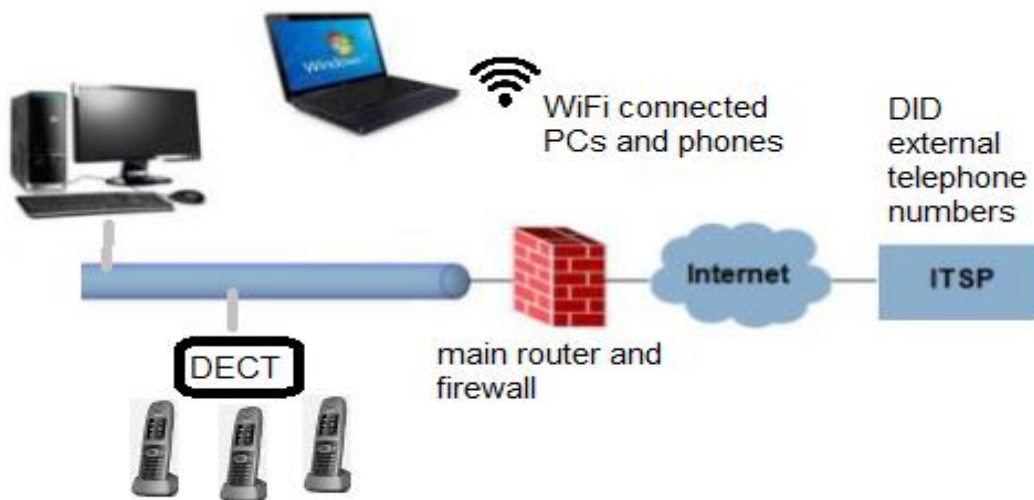
3 Business Scenarios

There are so many different scenarios for businesses and thousands can be lost if the wrong decisions are made. It is vital that the business IT and/or telephony departments fully understand the requirements of the business and the existing configuration.
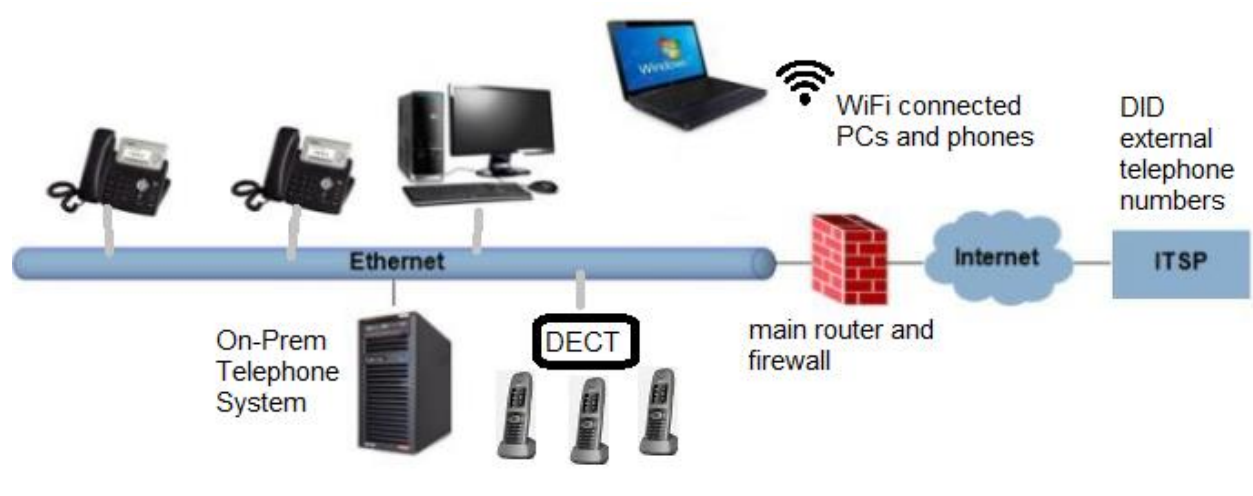

Above – typical small business scenario with local on-premises telephony

- connecting your existing telephone system to a VoIP gateway/adapter
- install ip capable hardware to your telephone PBX systems {which can be very expensive}
- install a new VoIP telephony system which will be compatible with your existing telephony system to allow you to migrate gradually from the old PBX telephone system to VoIP as and when it suits your business - keep the original expensive PBX system working until it has reached the end of life and/or end of support contract {no need to buy new telephone handsets}
- Migrate to a cloud based VoIP provider.   There are a vast array of providers that will port numbers to their cloud system and provide a vritual PBX service for your business, but make sure they are providing ALL of the features your business needs AND that their services are cost effective as compared to keeping you own on-site telephony system
  - remember if you use a cloud service and your Internet is down, ALL your telephones will be offline also
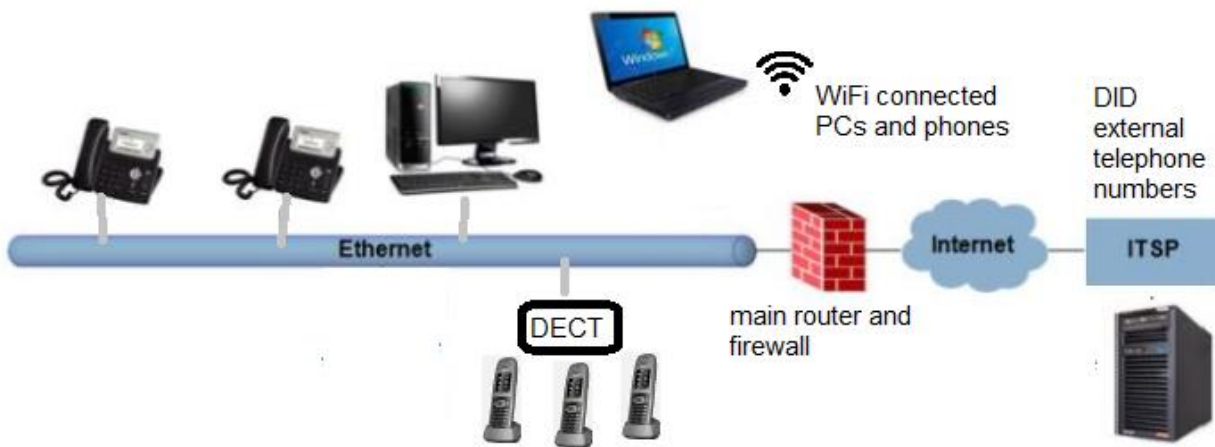
Above – typical hosted/cloud based telephony provision for small business
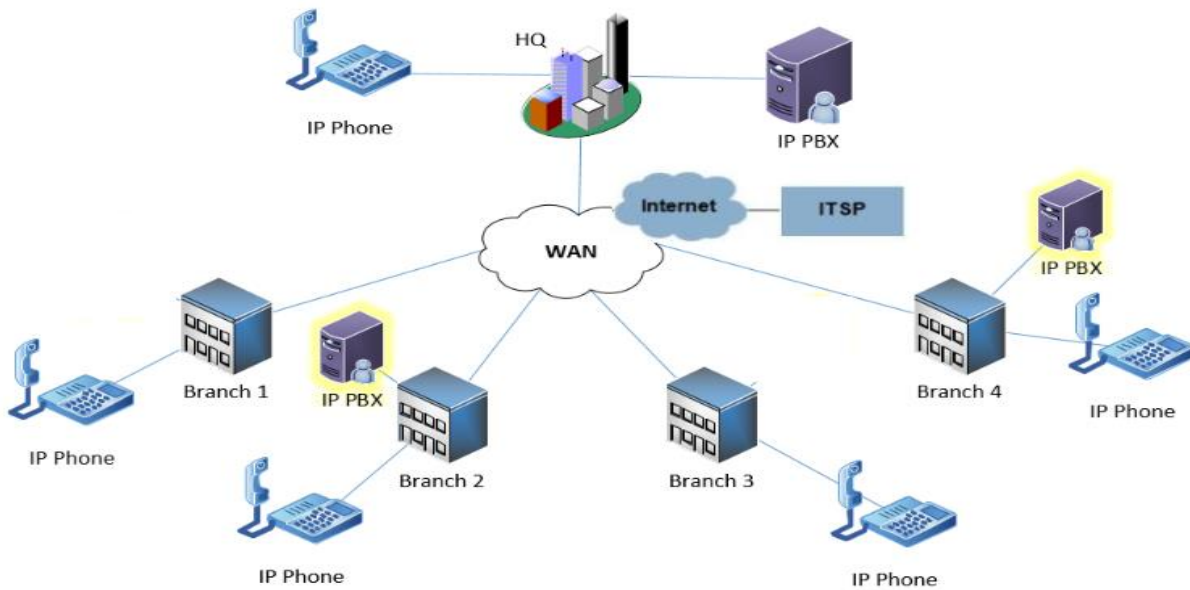
Above – example for a medium sized company with several sites all using different manufacturers equipment

If you are not sure what systems you have still using analogue services give us a call for a no-obligation chat.

Glossary

TERMS	MEANING
VoIP	"Voice over IP" – making phone calls via the Internet and/or private networks
IP	"Internet Protocol" – the protocol used by most business networks and the public Internet
Jitter	variability in latency in the ip packet transmission process
SIP	"Session Initiation Protocol" voip call setup and control protocol
SIP-Trunking	SIP trunking allows one or more simultaneous calls between systems
PBX	"Private Branch eXchange" = the legacy business telephone system
PSTN	"Public Switched Telephone Network" legacy telecom provider network {land lines}
ISDN	Legacy {Integrated Services Digital Network} circuit switched network was used to provide voice and data over a dedicated line to the telephone exchange. BRI = basic rate ISDN provided 2 x 64kbps channels + 16kbps signalling channel used to provide 2 channels, PRI = primary rate ISDN provided multiple 64kbps channels usually with a minimum of 8 channels used to provide data and voice {with 8 simultaneous calls} up to 30 channels per PRI circuit {for 30 simultaneous calls etc…} Expensive rental contracts from the providers and expensive interfaces/equipment on-premises usually required.
aDSL	Asymmetric Digital Subscriber Line {Internet connection over analogue land line – usually to the local telephone exchange DSLAM with speeds up to 18Mbps down and 1.5Mbps up} very limited by distance from user to telephone exchange with speeds falling as distance increases – average speeds of 18Mbps over 1km and only 4Mbps at a distance of 4km
vDSL	Very high speed Digital Subscriber Line {Internet connection over analogue land line – usually to the street cabinet with speeds up to 50Mbps down and 3Mbps up} very limited by distance from street cabinet.
vDSL2	Very high speed Digital Subscriber Line {Internet connection over analogue land line – usually to the street cabinet with speeds up to 200Mbps down and 100Mbps up} very limited by distance from street cabinet
vDSL2+	Very high speed Digital Subscriber Line {Internet connection over analogue land line – usually to the local telephone exchange DSLAM with speeds up to 300Mbps down and 100Mbps up} very limited by distance from street cabinet – average speed 30Mbps at a distance of 1km and only 18Mbps at a distance of 2km

TERMS	MEANING
DSLAM	Digital Subscriber Line Access Multiplexer – equipment used to connect the provider to the 'last-mile' copper cabling to the subscriber. The DSLAM connects the provider fibre network trunks to allow multiple subscriber connections into the provider networks.
FTTC	Fibre To The Cabinet – installed in the street to minimise the distance of the 'last-mile' copper cabling to the subscriber. Providers often refer to this as a 'fibre internet provision' even though it is NOT connecting the subscriber directly to their fibre network.
FTTP	Fibre To The Premises – fibre brings the Internet feed into the property and eliminates the 'last-mile' copper cabling although in many domestic locations the fibre is terminated using the same technology as used in FTTC {vDSL} which limits the speed to vDSL2+ levels. In business connections the fibre is usually terminated directly on the routers within the company network to achieve much higher speeds and remove the delays and single points of failure found in home installations {sometimes called 'Full Fibre' by some providers}
DOCSIS	Data Over Cable Service Interface Specification = used by cable TV providers which permits high speed Internet to be provided over the cable TV network to the subscriber. DOCSIS 4.0 supports speeds up to 10Gbps and downstream speeds of 6Gbps. A viable alternative to the FTTC/FTTP options for those connected to the cable TV network, but can be very expensive.
DID	Your external telephone numbers {Direct Inward Dial or in the UK DDI Direct Dialing Inwards}
ITSP	Internet Telephony Service Provider – the telco that is providing your DID usually via SIP trunk over the Internet – sometimes the ITSP also provides hosted/cloud telephony services
On-premises systems	Equipment located in the office or home to provide the services rather than using a cloud based solution {no rental costs, but installation and maintenance possible} – for example a VoIP telephone system
Cloud System	Using the services of a provider rather than having equipment on-premises system. {rely on the service provider for dialtone etc. – monthly fees usually apply and flexibility limited to provider contract etc.}

If you are not sure what systems you have still using analogue services give us a call for a no-obligation chat.

For more information and/or unbiased advice https://www.kccvoip.com