RISCAuthority

administered by FPA Fire Protection Association

Security Bulletin: ATS: all-IP migration

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1 Overview

Akin to the TV analogue signal switch off in the UK in 2012, the telecommunications industry are preparing similar for the telephone analogue network by 2025. There is a long way yet to go with this planned migration and this bulletin is the first of a series on the subject – updates will be available as details of the rollout become available.

2 Background

In May of 2018 Openreach, the division of BT plc responsible for the management of the national telephone infrastructure, most of which is in BT plc ownership, announced that it intends to close the PSTN (public switched telephone network) in 2025. Originally consisting essentially of fixed copper wire analogue connections over which subscribers were connected by the operation of switches in the telephone exchanges, the PSTN technology in use today remains based on point-to-point connections set up by circuit switching in exchanges.

Thus whilst in UK the backbone of the network (core network) has now been digitised, most local connections still operate on the original switched principle which, in the modern age, is no longer fit for purpose and the equipment is at the end of its service life. Whilst the PSTN requires physical lines, IP telephony is all digital and requires nothing more than the internet to be fully operational.

In recognition of this, Communications Providers (CPs) around the developed world have taken the decision to migrate their PSTN to an all-IP digital service which, for voice communication, will employ VoIP (voice over IP) technology. This means that after 2025 only those subscribers that have a broadband connection provided by one of the CPs, (of which there are about 600 - BT, Vodafone, Virgin, Talk Talk etc) will have a voice telephone service. The physical connection might be fibre or copper or a combination – the technology will be compatible with both.

Alarm transmission systems (ATS) relied on by security, fire and social alarm systems employ, to one extent or another, the telephone service to convey their signals (alarm, fault, set/unset etc). In the IP environment these will be labelled, in the jargon, ‘Over the Top’ (OTT) services or ‘special services’ and an all-IP platform will be challenging for some of the signalling technology currently employed by these services.

3 Potential problems

There are two principal potential problems for alarm systems:

1. PSTN telephone connections have for decades carried a 50V DC supply on the line which is available to the connected equipment at the premises for it to be fully functional. This supply and the telephone service itself is available independent of the availability of electricity from the public utility. Thus, telephones continue to work normally during power outages.

   In future, this supply will not be available via the telephone connection. Instead, the VoIP telephone and any special services (e.g. an alarm system) will rely on continuity of the mains electricity supplied locally to the CP’s router on the premises. Should this supply fail, the telephone service, and any connected special services(s), will be unavailable unless the customer arranges for the router to be connected to a standby power supply. Such a supply will not be provided by the CP unless the user is deemed a ‘vulnerable customer’ (e.g. an infirm individual) in which case a one hour standby supply is expected to be included free of charge.

   An interim solution will be made available for a limited period (yet to be determined) for those customers happy to forego the benefits of an IP service so that they can continue to use their traditional PSTN telephone equipment. This fix is labelled by Openreach as ‘PSTN emulation’. In practice it consists of a socket on the router

known as the ATA (Analogue Telephone Adaptor) port into which the customer can plug a traditional analogue telephone and continue to receive the 50V supply. Analogue signals (speech, tones etc) passing through this port are converted by the router into IP and conveyed to their destination by broadband. However, in this case the 50V is supplied by the locally powered router rather than the telephone system so any equipment such as a telephone or alarm ATS designed to rely wholly or partly on a continuous 50V supply will still fail to operate normally.

2. The second main problem is linked to the first. Present day and legacy alarm system diallers, whether digicoms or dual path units that include a dialler, will need to be connected via the ATA port but will suffer from the unavoidably divergent characteristics of the conflicting technologies – analogue and IP. This is because in practice the IP network will work differently from the old PSTN service – introducing, for example, 'round trip delay' which legacy alarm equipment cannot cope with very well. Even those dial-up products that have been modified in recent years to be more tolerant of round trip delay on a PSTN network may not work correctly on an all-IP platform.

   As a result, many in the security industry expect to have to scrap the installed estate of dialler technology (single path and dual path relying on a dialler), replacing it in the medium term with dual path IP-GPRS (or GPRS-GPRS). It remains to be seen whether the present capacity of the industry could complete such a programme in the necessary timescale.

   Moreover, some CPs such as Talk Talk and Sky operate their own in-house equipment with network characteristics that can vary to one degree or another from the way BT owned network equipment functions. This will continue going forward. This might mean that equipment deemed compatible by one CP affiliated test facility cannot be relied on should its signals pass through the network of another CP. One consequence, according to the BSIA, is that there is a serious risk that signals from an alarm system conveyed by one CP can cross the networks of one or more other CPs on their way to an Alarm Receiving Centre (ARC) and be degraded in an unpredictable way.

It is the responsibility of security and fire companies to ensure in future that their ATS devices will operate reliably on the new platform, irrespective of CP. ATS devices operating over broadband/radio should continue to work normally. Where a given broadband connection supports multiple services there will be 'some level of prioritisation'. Ofcom will require any 'voice' traffic on the line to be prioritised. However, they claim that, irrespective of prioritisation, there will be no material change in the speed with which alarm signals reach their destination.

Concerning BT Redcare, in principle, the Redcare Classic product can continue in service as long as the copper connection to the protected premises remains in place and Redcare scanners are allowed to remain in the exchanges. We have no reason to believe that a wholesale strip-out of BT's copper connections will occur during the IP rollout programme. However the Redcare Classic and Redcare Classic GSM products are not amenable to modification to make them compatible with IP technology and at some future point are certain to be withdrawn. As this document is published, Redcare are known to be working on new products and a statement on the future of Redcare Classic is expected.

4 Migration programme

The project started last year when BT Openreach carried out trials and made their research facility at Adastral Park available to the alarm industry for equipment testing. BT's consumer division are scheduled to start migrating customers to new digital services at the time of publication. Conversions will be 'customer-led' in the first few years on an 'elective basis'.

The first customers will be offered incentives to migrate when they place an order for BT broadband a faster broadband service.

The new equipment may be referred to, in the case of Openreach, by either 'SOGEA' or 'SOG.fast'. We have no reason to believe at the moment that the difference between the design and application of these products will be material to the OTT special service (alarm signalling) using the connection.

The plan is for compulsory migrations to start sometime in 2022. This is BT's programme and other CP's will have their own but all CP's will be expected to have completed their rollout by the end of 2025. The date by which providers will switch off their PSTN networks will vary. There is no set date for a UK-wide switch off.

If they have not done so already, BT will ascertain from ARCs the telephone numbers of customers with signalling alarm systems and will initially exclude them from the programme. These customers will be asked by BT whether, as thought, they have a special service connected and, if so, to contact their alarm company to satisfy themselves that the alarm signalling will work correctly when the new platform comes in.

BT say that even if this procedure fails to detect the presence of an alarm system on the line, customers will nevertheless, as a matter of course, always have explained to them that should they have a special service they should inform their supplier before ordering a digital phone service.

Where Openreach detect that a line already supports a special service such as an alarm system, they will communicate with the subscriber and ARC alerting them to the need to ensure the equipment on the line will operate correctly on the new platform. They will also reschedule the migration for that particular customer to a date later in the rollout programme to allow the parties to ensure their service will be compatible in time.

5 Conclusion

There are dangers for insurers and their customers in neglecting this subject or not acting at an early enough stage. It goes without saying that insurers will wish to take steps to have their relevant staff and selected policyholders informed of the all-IP project to the extent of the details available at the present time. Relevant policyholders need to take on board that it is their alarm company that has the responsibility of selecting all-IP compatible equipment, making the correct selection and implementing the change at the appropriate time. Customers need to seek the alarm provider's assurance that the correct functioning of the alarm system, including the ATS, will be essentially unchanged.

Some customers will see no change for some time and these may not be faced with a decision until they are communicated with on the subject by their alarm provider and/or CP. Others, for example those moving to new premises, or changing their insurance arrangements, may well find that that their choice of ATS solutions will differ from what they, or their insurers, considered suitable in the past.

However it is assumed that for most customers the migration will impact them when their alarm provider seeks their agreement to a replacement ATS. It would be prudent to remind policyholders of the need to seek insurer agreement to the proposed replacement when this occurs.

Insurers may also wish to consider, in the absence of standby power for the router (the default), whether they need to take a position on the provision of a standby power supply. In future, a traditional single path ATS such as a digicom or a replacement single path IP or GPRS product will be unsupported if the electricity fails. One path of a dual path ATS may also fail in these circumstances although any GPRS path should be sustained as normal by the alarm system stand-by power supply.

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