Fibre Network Operator and Internet Service Provider Best Practice Recommendations

Version 3.2, 2024-08-28

Contents

Introduction

This document contains a set of best practice recommendations for Fibre Network Operators ("**FNOs**") and Internet Service Providers ("**ISPs**") providing services over fibre networks in South Africa.

This document has been developed by the Internet Service Providers' Association NPC ("**ISPA**"), following considerable consultation with both ISPA's members and with FNOs who are not members of the Association. It is likely that these guidelines will continue to be revised and updated in the future based on additional industry feedback.

The primary goal of these recommendations is to ensure that consumers and businesses using fibre-based internet access services experience a consistent, fair and reasonable approach to the provision of those services from companies offering such services.

These recommendations will also be used as the basis for development of additional information resources for subscribers and potential subscribers of fibre-based internet access services.

It is recognized that the Electronic Communications Act ("**ECA**"), the Competition Act and the Protection of Personal Information Act ("**POPIA**") provide a legal context for this document. These recommendations are intended to be practical rather than legally prescriptive, and contain many recommendations which promote fair competition in the market. ISPA is mindful of the need to comply with competition law in any engagement involving bodies of horizontal competitors.

SECTION A: OPEN ACCESS NETWORKS

Many FNOs market their networks as Open Access Networks ("**OANs**"). There is no universal definition of an OAN, nor does South Africa's electronic communications legislative framework define the term in any way. Although Wikipedia is not a telecommunications terminology authority, we can get some sense of the intended meaning from its definition.

This has the following key points, paraphrased and with emphasis added:

- Open Access is a model in which an infrastructure provider limits its activities to fixed value layers in order to **avoid conflicts of interest**.
- An Open Access provider creates a platform for **ISPs to add value** and remains neutral and independent.
- An Open Access provider offers **standard and transparent pricing** to ISPs on its network.
- An Open Access provider **never competes** with the ISPs using its network.

It is recommended practice for FNOs to operate their networks on an Open Access basis. Operators who refer to their networks as Open Access Networks are strongly encouraged to take cognisance of these recommendations. Even for FNOs who do not specifically operate Open Access networks, these principles are recommended practices.

A1. Minimum requirements for an Open Access Network

For a network to be considered an OAN in South Africa, it must meet the following minimum requirements:

- An OAN operator must offer the **same pricing to all ISPs** on its network. It cannot offer any ISP preferential pricing for any services provided using the OAN. Preferential pricing includes offering volume-based discounts and promotions.

  > *Offering preferential prices is not only counter to best practices, but also a regulatory concern. Section 9(1) of the Competition Act and Price Discrimination Regulations restrict dominant firms from engaging in price discrimination, particularly in the supply of services to small and medium-sized enterprises and firms owned by historically disadvantaged persons.*

- An OAN operator must have **transparent pricing**. It must not be a requirement for an ISP to enter into a non-disclosure agreement in order to obtain pricing information from an OAN operator. In addition, FNOs should not contractually prohibit ISPs from disclosing the costs of the FNO's services.

- An OAN operator **must not compete** directly with the ISPs using its network. No services on the OAN can be offered directly to end-users of the OAN, but must only be made available by an ISP using the OAN.

FNO best practice checklist

- *Do offer the same pricing to all ISPs.*
- *Do not offer any ISPs preferential pricing.*
- *Do not offer volume discounts.*
- *Do not require that ISPs sign a non-disclosure agreement.*
- *Do not prevent ISPs from disclosing the cost of the services.*
- *Do have a standard contract applicable to all ISPs.*
- *Do not sell services directly to customers in competition with ISPs.*

A2. Shareholding conflicts of interest

Ideally, the operator of an OAN should not have a financial interest in any ISP. This is the simplest way to avoid conflicts of interest and incentives to engage in discriminatory tactics. However, it is acknowledged that the reality of the South African sector is that there are many FNOs that share a common holding company with an ISP, have ISP subsidiaries, or have some other financial interest in one of the ISPs selling services on their network.

Competition law places significant restrictions on the activities of vertically integrated firms, particularly if a company is dominant in a particular market segment. The nature of fibre roll-outs means that most FNOs could be considered dominant in particular geographic areas

or market segments. FNOs with a direct or indirect financial interest in an ISP should thus exercise exceptional care to ensure that wholesale and retail operations are structurally and financially separate and that they do not engage in unlawful sharing of resources or customer information.

An FNO with any interest in an ISP (or vice versa) must treat that ISP identically to all other ISPs selling services on its network.

FNO best practice checklist

- *Avoid financial interests that create conflicts of interest.*
- *Do keep wholesale and retail operations structurally and financially separate.*
- *Do not share information or resources between wholesale and retail operations.*

A3. Prohibition on discriminatory tactics

It is possible for an FNO to engage in discriminatory tactics (deliberate or inadvertently) whether or not it claims to operate an Open Access network, and whether or not it has a financial interest in an ISP. To avoid behaving in a discriminatory manner, best practice is for an FNO to have a clear policy of equal treatment for all ISPs using its network.

Treating ISPs equally is not limited to pricing of services, but includes other incentives or advantages. In a highly competitive market, characterised by thin margins and largely transparent input costs, promotions that enhance one ISP's ability to sign-up customers at the cost of its competitors can be just as damaging as preferential pricing.

Although this is not intended to be an exhaustive list of possible discriminatory tactics, these recommendations cover the following practices specifically:

- An FNO should provide all ISPs with equal access to its network and equal access to all of the services offered on its network. There should not be portions of the network accessible to only a subset of ISPs, nor should there be types of fibre services that only some ISPs are permitted to sell. An exception to this is technical capability. If there are some services for which an ISP must have specific technical expertise or infrastructure to be able to sell effectively, then it is acceptable to restrict access to those services only to the ISPs who can demonstrate the required capability.
- Providing preferential treatment to one ISP during the initial roll-out of services to a geographic area is prohibited. An operator should not give one ISP exclusive access to customers in an area before other ISPs. All ISPs must be given access to the network in an area at the same time.
- Providing promotions or special offers to only one ISP is prohibited. If an operator wishes to offer price reductions, limited-time special offers or other promotions on its fibre access services, then those offers must apply equally to all ISPs.
- Discriminatory promotion of one ISP over another in marketing material is prohibited. Any information an operator provides about the ISPs offering service on its network must promote all ISPs equally. This includes any listing of ISPs on the operator's

website. Where an operator lists its ISPs on a web page, the order of the listing should be randomised for every view, so that no ISPs are unduly favoured.

- Paid-for promotion of one ISP over another is strongly discouraged. An example of this is accepting payment from one ISP to give that ISP particular prominence on a website. This practice is confusing for consumers, who may have no way of knowing that the ISP has paid for special treatment. As a minimum, any paid advertising needs to be clearly labelled as a paid-for promotion so that a consumer does not mistakenly believe that the FNO is recommending one ISP over others.
- Avoid preferential access to information. This includes details of upcoming promotions, news of planned new coverage areas, access to mapping data, and access to technical information about the network. Information about an FNO's network and services should be communicated to all ISPs in the same manner and at the same time, preferably via a centralised ISP portal.

FNO best practice checklist

- *Do provide all ISPs with equal access to all parts of the network.*
- *Do provide all ISPs with equal access to all of the services offered on the network.*
- *Do not provide preferential access to one ISP when rolling out services in a new location.*
- *Do provide all ISPs with equal access to promotions and special offers.*
- *Do not give some ISPs advanced knowledge of upcoming promotions and specials.*
- *Do not promote one ISP over another on any marketing material, including websites.*
- *Do list ISPs in a random order on a website for each visitor to the site.*
- *Do not engage in "paid for" promotion of one ISP over others.*
- *Do provide all ISPs with equal access to mapping information.*
- *Do provide all ISPs with equal access to technical information about the network.*

A4. Barriers to entry

The previous best practice recommendations in this section deal with the equitable treatment of ISPs already using an operator's network. However, unreasonable barriers to entry for new ISPs who wish to gain access to a network can also prevent that network from being truly open.

The creation of new businesses and development of SMMEs is generally considered to be an important requirement to grow South Africa's economy. It is thus important for FNOs to make it feasible for new ISPs to sell internet access services over fibre networks, and not to restrict access to the fibre market only to established operators.

No arbitrary numerical limits on ISPs

An FNO should not place an arbitrary limit on the number of ISPs it provides with access to its network. While it is understood that it might be undesirable for an FNO to have an ISP on its network who has only a very small number of customers, there may be strategic advantages to that ISP in being able to offer services on that network to a limited number of customers. Such a situation should be addressed by other means, for example by

implementing a minimum revenue commitment linked to the cost of providing access to the ISP, rather than simply blocking any new ISPs from selling services on that network.

Placing a simple numerical limit on the number of ISPs is an unacceptable restriction, unless there are demonstrable technical limitations preventing an FNO from adding additional ISPs to its network.

Minimum revenue commitments
Some FNOs have minimum revenue commitments for ISPs using their networks. This means that irrespective of the number of customers an ISP has on that network, the ISP will be charged a fixed minimum cost for access to the network. Where they exist, minimum revenue commitments should be reasonable, and must not exist solely for the purpose of limiting the number of ISPs using that network.

In addition:

- Any minimum revenue commitments for ISPs must be clearly-defined, transparently communicated, non-discriminatory and applied consistently to all ISPs.
- Any minimum revenue commitments should bear a reasonable correlation to the cost of providing an ISP with access to the network.

Ramp-up periods
In some cases, FNOs specify a ramp-up period, giving an ISP a fixed period to grow its customer base before a minimum revenue commitment becomes applicable. This practice is recommended, as it offers new market entrants an opportunity to develop their businesses in order to cover the fixed minimum costs.

It should be noted that meeting a minimum revenue commitment for a new market (for example, a geographic area not previously serviced by fibre operators) is easier for an ISP than meeting a commitment for a market where demand for services is already saturated. Where it is administratively and technical feasible, the ramp-up period should take into account this difference. A new operator offering services in a saturated market will need more time to reach minimum revenue commitments.

FNO best practice checklist
- *Do not have minimum revenue commitments that are unrelated to the cost of providing an ISP with access to the network.*
- *Do give new ISPs a ramp-up period to reach any minimum revenue commitments.*
- *Do not place a numerical limit on the number of ISPs able to connect to the network.*

SECTION B: COMMUNICATIONS WITH CUSTOMERS

The South African electronic communications legislative environment envisages a model with Electronic Communication Network Service ("**ECNS**") providers and Electronic Communication Service ("**ECS**") providers. Licences are issued on this basis by the regulator,

and different obligations and rights apply to each category of licence. In essence, the ECNS operator provides capacity on the physical network and the ECS operator uses that network capacity to provide services to customers.

In the provision of fibre access services, typically the FNO is the ECNS provider and the ISP is the ECS provider. There is a business relationship between the customer and the ISP offering the service, and between the ISP and the FNO. This is mirrored by the contractual scheme in place. There is a contract in place between the FNO and the ISP and there is a contract in place between the ISP and the customer. There is no contract between the FNO and the customer. This framework informs best practice recommendations for communications with customers.

B1: Customers' personal information

The Protection of Personal Information Act ("**POPIA**") provides a framework for service providers to follow when dealing with the personal information of their customers. In addition, the Regulation of Interception of Communications and Provision of Communication-Related Information Act ("**RICA**") requires that ISPs keep a record of the identities of the customers using their services. Combined, these pieces of legislation inform best practice recommendations when it comes to retaining fibre customers' personal information:

- An ISP must maintain sufficient customer personal information to comply with RICA requirements as well as to be able to bill each customer. An ISP should share customer information with an FNO only after obtaining the customer's consent to do so. Obtaining such consent should be part of every ISP's process for signing up a customer.

  > **Tip**: Many customers will not answer calls from unknown numbers. Sending an SMS or email to a customer asking them to expect a call from a particular number that day will increase the chance of a successful installation.

- An FNO will typically retain a record of the physical address (or other geographic data, such as GPS coordinates) associated with each fibre access line. This is necessary for the FNO to operate and manage its physical network.

- An FNO may also need access to additional personal information (such as a name and contact information) for a customer for the purpose of installing a line. This information may also be required to perform maintenance on a line.

- An FNO should not retain the personal information of a customer (other than the physical address) after an installation has been completed, or after necessary maintenance has been done. POPIA requires that personal information be collected with a specific purpose, and not be retained longer than necessary. Since the contract for the fibre service is between the ISP and the FNO, it is usually the ISP and not the FNO who is the custodian of the personal information necessary to bill a customer and for RICA compliance purposes.

- When an FNO requires access to a customer's personal information in order to perform maintenance on a line, the required details should be either requested from

the customer's ISP, or provided to the FNO by the ISP if a request for maintenance is sent to the FNO.

- It should be noted that in some cases, an FNO collects personal information of customers or potential customers. In such cases, the FNO may have obligations to retain that data, and the above recommendations should not be viewed as preventing an FNO from meeting its legal obligations. Examples of such situations include:
    - An FNO collects details of potential customers during a drive to promote fibre roll-out in a new area. This personal information is then passed on as leads to ISPs.
    - An FNO invoices a customer directly for a non-standard installation.
    - An FNO handles RICA compliance for customers as a service in a specific market (notwithstanding that this compliance with this obligation is required from the ISP).

- It is the responsibility of both the FNO and the ISP to ensure that they have a solid understanding of the lawful processing requirements for customers' personal information and to make sure that there is a valid data operator agreement in place where the personal information is collected by one company and processed by another. In cases where one party uses a customer's personal information in contravention of this agreement, for example if an FNO uses customer information provided by an ISP to market services directly to that customer, this breach should be reported to the Information Regulator.

ISPA recognises that some of these best practice recommendations are at odds with common industry practices. Currently, some FNOs act as custodians of the personal information of fibre customers and permit ISPs to make only limited changes to that information via their ISP portals. ISPA believes that this practice is not consistent with the licensing framework for communications services nor with the requirements of POPIA. FNOs and ISPs are strongly advised to review their business practices and handling of customers' personal information accordingly.

ISP best practice checklist

- *Do seek consent from each customer to share their personal information with an FNO for the purpose of installing or maintaining a line.*
- *Do ensure that you have a valid data operator agreement in place if you are collecting customer information and sharing it with an FNO.*

FNO best practice checklist

- *Do not retain customer personal information longer than necessary for the installation or maintenance of a line.*
- *Do ensure that you have a valid data operator agreement in place if you are collecting customer information and sharing it with an ISP.*

B2: Communications with customers

As a general rule, ISPs should be responsible for all service-related communications with individual customers using their services. FNOs also communicate with customers, but they generally communicate with individual customers only at the behest of an ISP (e.g. for

installations or repairs). On the other hand, FNOs do need to communicate with customers in general (the public) in order to promote their services and their brand.

The following recommendations are made:

- As far as reasonably possible, an FNO should channel all communications with the customers of an ISP via that ISP.
- An FNO is welcome to market its services to consumers on a general basis, but should not approach specific customers with offers. Indeed, since an FNO is only provided with the personal information of a customer for the express purpose of installing or repairing a line, that customer's personal information may not lawfully be used to communicate a sales or marketing offer.
- ISPs should strongly discourage their customers from approaching FNOs with queries relating to services. It is not the role of the FNOs to provide support services to the customers of ISPs.

ISP best practice checklist

- *Do discourage customers from approaching FNOs with service queries.*

FNO best practice checklist

- *Do not communicate directly with an ISP's customers unless requested to do so by that ISP.*

B3: Service level agreements

Service Level Agreements ("**SLAs**") are a particular topic for which communication with consumers is frequently inadequate.

Fibre services are often lacking in clear distinctions of the service levels offered for each category of service. Some FNOs provide a business service only to a customer who has a dedicated server cabinet. Some ISPs market services as "business" services simply on the basis they have higher speeds. Some FNOs provide the same SLAs for all of their fibre services. FNOs may have vague criteria about who qualifies for a business service, and may force a customer in a residential location to install a business service on the basis that they are operating a business from that location.

Customer expectations for SLAs are also confused. Some customers who work from home mistakenly believe that business-level SLAs apply to them simply because they are running their business from home. Some customers mistakenly believe that SLAs allow them to make claims for "loss of earnings" if their service is not working rather than (at best) a rebate for the time during which the service was not operational.

The vast majority of SLAs have no consequences if the FNO or ISP offering them fails to meet the SLA, meaning that they are really nothing more than an nonbinding estimate of expected fault resolution times.

The following recommendations are offered:

- ISPs and FNOs should not offer SLAs that they cannot meet simply to land a contract. Service providers must only offer SLAs which are supported by their track record of service provision for similar services over the preceding year.
- Marketing should not create the misleading impression that a customer will be refunded for periods that a service is not available unless that is, in fact, the case.
- FNOs are encouraged to publish SLAs which:
    - Include specific minimum uptimes (rather than simply "best effort").
    - Reference escalation procedures to be used when services are not working and when SLAs are not met.
    - Specify whether the SLA is standard for the service or must be purchased as an option.
- FNOs are encouraged to recognise that ISPs are technically sophisticated and may appreciate SLAs that cover:
    - Acceptable packet loss between CPE/ONT and the data centre ENNI.
    - Maximum number of short drops per month (a high percentage uptime can hide frequent short outages)
- FNOs are encouraged to pass credits where there is no service for an extended period beyond their SLA mean-time-to-repair. In these circumstances the ISP is under extreme pressure to pass a credit. ISPA accepts that there will be some situations where it is not appropriate for credits to be passed. These are usually *force majeure* situations, such as floods, vandalisation of substations, etc.
- ISPs should not offer a customer an SLA which is not supported by the FNO whose network they are using to provide that service. It may be the case that an ISP wishes to advertise one SLA for all of its fibre services despite the fact that those services are offered via a number of different FNOs. This is understandable, but in such a case, the ISP needs to make it clear in the terms and conditions for the service that there may be some variation of the SLA depending on the providing FNO.
- ISPs should not blame an FNO for network problems that are not the fault of the FNO. Likewise, FNOs should not blame an ISP for network problems that are not the fault of the ISP.

ISP best practice checklist

- *Do not offer customers SLAs that are not consistent with the SLAs an FNO provides.*
- *If an FNO provides different SLAs for "home" and "business" fibre services, do make sure that this difference is clearly communicated to customers up front.*
- *Do ensure that terms and conditions clearly specify that no refunds apply for periods the service is unavailable (unless refunds are provided under an SLA).*
- *Do not blame an FNO for outages that are not, in fact, caused by the FNO.*

FNO best practice checklist

- *Do publish SLAs which specify minimum uptimes.*
- *Do make it abundantly clear which SLAs apply to each category of service offered,*

- *Do not blame an ISP for outages that are not, in fact, caused by the ISP.*

B4. Customer premises equipment

Damage to the termination equipment or installed infrastructure at a customer's premises is a common problem in the industry. The cause of damage is sometimes component failure and sometimes the fault of the customer due to accident or negligence. Depending on the cause, FNOs typically hold the ISP liable for the replacement costs.

The following recommendations are made:

- Customer Premise Equipment ("**CPE**") should be installed in such a way that the customer can access any status lights, for troubleshooting. Similarly, the serial number or line number should be visible without requiring the removal of the CPE.
- FNOs and ISPs should advise customers against installing CPE and wallboxes in publicly accessible areas, to minimise the chances of vandalism or theft.
- FNOs should have a clear policy setting out when the ISP will be held liable for the replacement costs of CPE and/or the repair of the connection to the premises. It is recommended that where the end-user has broken, damaged, removed or stolen the CPE, the FNO can hold the ISP liable for the replacement costs. When the cause of the problem is component failure, the ISP should not be held liable for the costs.
- ISPs must make the customer's liability for replacement or repair costs in case of damage clear in the terms and conditions for the service.
- Where the service agreement includes liability for replacement or repair costs, those costs should be specified, to enable the ISP and/or the customer to insure against accidental damage.
- An FNO or ISP should be transparent about the extent of replacement or repair costs. Will charges be levied based only on the components or devices that need to be replaced or does a single repair cost apply irrespective of the scope of the damage? Ideally, repair costs should be cost-based and not punitive.
- Where feasible (and only with the permission of the client) pictures of the equipment before and after installation or repair may be a useful tool when passing on costs for damages to the relevant party.

ISP best practice checklist

- *Do make sure that a customer's liability for damaged or stolen CPE is clearly specified in the terms and conditions for the service.*

FNO best practice checklist

- *Do have a clear policy setting out when an ISP is liable for the costs of replacing broken CPE.*
- *Do be transparent about how repair costs are calculated so that ISPs can pass these costs onto their customers.*

B5: Consumer education

General consumer understanding of fibre services is often lacking. In particular, consumers have a poor understanding of the many factors that may impact the quality of their service and the perceived speed of the service provided based on measurements made on a particular device.

It is the collective responsibility of all FNOs and ISPs to enhance public understanding of the following topics through communications with customers, the media and by means of public education campaigns:

- A FNO provides a connection speed to the point at which the fibre terminates in the building. The FNO is not responsible for the speed of the connection beyond this point.
- Many factors may cause a deterioration of the quality of service within a customer's premises, particularly if that customer uses wireless connections to link devices to the fibre termination point. Factors include distance between devices and a wireless router, walls, interference from other wireless networks, congestion because multiple devices in the premises are sharing the same link, and many more.
- Not all devices are capable of handling high speed connections. A laptop that has a network card with a limited speed will not be able to make full use of a high-speed fibre connection even if plugged directly into the fibre termination point.
- Consumers underestimate the requirements of high definition services across multiple devices, and frequently complain about slow speeds while a number of other people are simultaneously using the service for high-bandwidth applications. Wireless home networks may not be able to support multiple users using such services even if the internet connection can.
- A speed test performed on a device is merely an indication of the speed that device is experiencing, and does not measure the speed of the service provided at the termination of the fibre. Put simply, unless the speedtest is performed at the termination point while no other devices are using the connection, it will not provide a reliable measure of the service speed.
- Most service level agreements do not provide for refunds in case of outages, but merely indicate the priority with which a fault will be addressed by the relevant FNO. Customers should expect to pay more if they need repairs to their service to be prioritised by an FNO/ISP. A customer working from home should consider investing in a business level service if the reliability and performance of the connection is crucial for that customer's work.
- Although many ISPs do provide home network installations and support, an ISP or FNO has no obligation to optimise a customer's home network configuration unless the customer is buying such a service from the ISP. Helping a customer to set up a home network properly is not a default part of an internet access service.

SECTION C: COMMUNICATION BETWEEN FNOs AND ISPs

Given the structure of the industry, where FNOs provide network services to ISPs and ISPs provide services to end-users, good communication between FNOs and ISPs is critical to ensure that end-users have an overall positive experience.

C1: Access to network information

Fundamental to an ISP's ability to properly support its customers is access to information about an FNO's network. To this end, the following best practice recommendations are made:

- FNOs should provide ISPs using their network with transparent and readily accessible information on all network outages and planned maintenance. This should include the scope of the incident (i.e. which customers are likely to be affected), the start time, the end time (if services have been restored) or a reasonable estimate of the expected length of the downtime (if the incident is ongoing).
- FNOs should provide an email notification mechanism for all outages and planned maintenance, so that ISPs are proactively made aware of incidents. Support for more advanced notification mechanisms such as webhooks is likely to be appreciated by ISPs.
- FNOs should strive to provide ISPs with as much information about the status of each line as is technically feasible, so that the ISP can troubleshoot end-user problems. This should include at least:
    - Fibre CPE status
    - Information about power problems (e.g. dying gasp messages)
    - Time offline or time since last online.

> *FNO technical staff reading this should note the following ISP requests:*
> - *Please include ONT/CPE signal level info and the reason for going offline on your ISP portal.*
> - *Please include DHCP Option82 line id with any DHCP request passing through an OLT.*

- Where technically feasible, all information about each line should be made available via a single, centralised portal or API, to ensure that ISPs can try to assist end-users without needing to log a query with the FNO.
- Every FNO should have processes in place (either manual/email on a portal or via an API) allowing an ISP to do the following things:
    - Apply for a new installation for a new customer.
    - Migrating a line from one ISP to another ISP.
        - This might be a migration involving the same end-user or a migration of a line used by a previous occupant to a new end-user.
    - Reporting a line fault.
    - Cancelling a service/line.
    - Upgrading the speed/service package associated with a line.
    - Downgrading the speed/service package associated with a line.
    - Suspending a line (typically because a customer has not paid).
    - Escalating any sufficiently outstanding query within the FNO.

- ISPs should ensure that their support staff have sufficient access to systems to be able to determine whether a fault lies with the ISP or with the customer's FNO. It helps nobody if an FNO provides an excellent API for an ISP to use but the ISP does not use this to assist customer support teams who deal with end-user queries.
- Not all parts of an FNO's network are equal. Situations frequently arise where some sections of a network do not (yet) have full connectivity redundancy or the capacity to withstand extended load-shedding periods. Where some parts of an FNO network have not yet been upgraded to the same standard as the rest of the network, this should be disclosed to ISPs, along with any upgrade plans.

FNO best practice checklist

- *Do provide ISPs with transparent and readily available information on all network outages and planned maintenance.*
- *Do proactively notify ISPs of network incidents via email.*
- *Do provide an API with as much information about the status of each customer's connection as possible.*
- *Do make sure that you have processes in place to support all common ISP requirements.*
- *Do share information about parts of the network that do not have fully redundant connectivity or which are more susceptible to power cuts.*

ISP best practice checklist

- *Do ensure that the information provided by FNOs is made readily available to the relevant support staff.*

C2: Clear escalation paths for communications

There are few things more frustrating when there is a critical network failure, or a chronically delayed installation, than to have queries remain unanswered. To this end:

- An FNO should provide:
    - A clearly defined process for ISPs to log faults and queries.
    - A clear escalation process for ISPs to follow for unresolved faults and queries.
- ISPs must follow the process for logging faults and queries before using the escalation process.
- The escalation process should specify the appropriate points of contact for each type of query and should make it clear under what circumstances it is appropriate for a logged query to be escalated.
- Communications need to flow in both directions, so an ISP should also provide:
    - A clear point of contact for FNOs to use for installation queries.
    - A clear point of contact for FNOs to report end-users faults.
- An ISP should ensure that its staff are trained to provide feedback to the FNO. A lack of feedback from ISPs to FNO reported issues is a common complaint from FNOs.

- Escalation paths should not be abused. The points of contact set out in an escalation path should be approached only when the first point of contact fails to be effective, and/or when a query meets the level of urgency defined in the escalation path.
- Escalation paths must be effective. A frequent problem for both FNOs and ISPs is that the escalation path relies on a single member of staff who is too busy to deal effectively with the volume of queries received (and occasionally takes leave).
- Separate from the escalation path, FNOs should provide a clear point of contact for new ISPs interested in using their networks.
- It is a common complaint by FNOs that they are forced to provide customer support because some of the ISPs using their networks do not provide adequate support to their customers. It is not the role of an FNOs to provide support to end-users. FNOs are encouraged to require that ISPs using their networks provide a minimum standard of customer support.

FNO best practice checklist

- *Do provide a clear process for ISPs to log faults.*
- *Do provide a clear escalation path to ISPs for queries that require special attention.*
- *Do not have escalation paths that rely on a single member of staff.*
- *Do provide a clear point of contact for new ISPs interested in using the network.*
- *Do impose a minimum standard of customer support for ISPs.*

ISP best practice checklist

- *Do follow an FNO's established fault logging process before escalating queries.*
- *Do not abuse an FNO's escalation path; escalate only if the initial point of contact is ineffective.*
- *Do provide a clear process for FNOs to use for installation queries and fault reports.*
- *Do make sure that staff are trained to provide feedback to FNOs on queries where appropriate.*

C3: New installations

Installations of new services can be divided into two categories.

- "**On-net**" installations are installations where an FNO already has fibre infrastructure in a particular area and only needs to connect the customer's premises to that infrastructure.
- "**Off-net**" installations are those where there is a requirement to extend the network infrastructure to the customer's area or location before that customer's premises can be connected.

When providing estimates of installation timeframes:

- Estimates of installation times should make it clear if they represent working days or calendar days.

- FNOs should make a clear distinction between installation timeframes for on-net and off-net services. ISPs should communicate this difference clearly to their customers.
- When communicating the installation times to their customers, ISPs should share maximum installation times as provided by the FNO (and not give more optimistic estimates simply to close a deal). ISPs should also make it clear to their customers that installation times are not guaranteed and may depend on external factors.
- One of the most common causes of installation delays is access to the premises where the service is to be installed. ISPs should make it clear to their customers that if the FNO is not able to gain timeous access to their premises, then the installation will be delayed. Since the end-user is a customer of the ISP and not a customer of the FNO, it is ultimately the responsibility of the ISP to ensure communications with a customer are sufficient for the FNO to gain access to the customer's premises.
- If an FNO becomes unable to meet previously communicated installation times for some reason (e.g. weather, industrial action, a global pandemic), this should be communicated to the relevant ISPs as soon as possible so that they can manage customer expectations. Where feasible, the FNO should provide an ISP with a record of the history of any delays for each installation so that the ISP can communicate these to the customer in an informed manner.

For on-net installations:

- It is recommended that FNOs provide a maximum installation time rather than a range of times. For example: "installations in areas when we already have fibre installed are done within ten working days" is better than "installations take 5-10 days".
- If an ISP's customer cancels their order before the installation has taken place, and the FNO has not yet incurred any tangible costs relating to that installation, then the FNO should not impose any cancellation charges on the ISP.

Off-net installations are more complicated than on-net installations. FNOs may have to deal with more than a dozen different entities to obtain wayleaves and clearances to extend their networks, and this can frequently lead to delays outside of the FNO's control. As a result of the unpredictability of installation times, situations sometimes arise where a customer has ordered a service and the ISP has, in turn, placed an order with an FNO, only to have the customer cancel that order as a result of delays.

When dealing with off-net installations:

- ISPs sales staff should be made aware that installation delays may be caused by circumstances outside of the control of an FNO. ISPs' communications with their customers should make it clear that this may be the case.
- FNOs should provide ISPs with a maximum typical expected installation time.
- FNOs should provide some mechanism for ISPs to track progress on outstanding installations, especially when cancellations will incur a cost for the ISP. This can be an active mechanism (e.g. weekly status updates on pending installations) or a passive mechanism (e.g. a way for ISPs to query progress on a particular installation). As far as

possible, updates on pending installations should include the costs already incurred for that installation, so that the ISP is aware of the costs of cancelling that installation.

- If the FNO becomes aware that any particular installation is likely to exceed the stated maximum typical expected installation time, then the ISP should be made aware of this as soon as possible.
- If a customer cancels an installation, and this results in a cancellation charge being levied on the ISP by the FNO, this fee should be based on the costs incurred (or which will still be incurred and cannot be avoided) by the FNO for that installation, and should not be a punitive charge.

Finally, following an installation:

- Once an installation has been completed, installers working for or on behalf of an FNO need to be cautious about how this is communicated to that customer. It is not uncommon for an installer to inform a customer that the installation has been "completed" when there is still an activation step required on the FNO's network. This causes the customer to mistakenly believe that the service is faulty, and triggers unnecessary complaints for the ISP.

FNO best practice checklist

- *Do clearly differentiate between on-net and off-net installation times.*
- *Do communicate any installation delays swiftly to the relevant ISP.*
- *Do provide a mechanism for ISPs to track progress of outstanding installations.*
- *Do base cancelled installation fees on incurred costs.*
- *Do not levy punitive costs for cancelled installations.*
- *Do make sure that installers do not give misleading information to an ISP's customers.*

ISP best practice checklist

- *Do not provide customers with unrealistic installation estimates simply to close a deal.*
- *Do clearly communicate the difference between on-net and off-net installation times to customers.*
- *Do make customers aware that installation times are not guaranteed and depend on external factors.*
- *Do make it abundantly clear to customers that an installation depends on access to the premises.*

C4: Notice of price increases

A price increase on the access service provided by an FNO to an ISP generally triggers an increase on the price an ISP charges its customer. This means that there needs to be sufficient time between notice of the price increase to an ISP and the date on which the price increase becomes effective.

It should be noted that:

- An ISP typically needs to provide its customers with a minimum of one month's notice of any price increase.
- Agreement periods do not necessarily overlap conveniently. An ISP may have one customer who signed up on the 1st of the month, while another signed up on the 30th of the month. In order to make sure that both of those customers receive a full month's notice before they receive their first invoice with the new charges, the ISP must send out a notification to all of its customers one month before the first customer is affected, which could be two months before the increase actually takes place.
- It takes some time for an ISP to draft and issue a price increase notice to its customers.

Given this, it is recommended that:

- ISPs should ensure that their agreements with their customers take into account the possibility that an FNO may impose a price increase on the ISP during the term of a customer's contract.
- FNOs should provide 70 days notice to ISPs of upcoming price increases. This gives ISPs enough time to make sure that all customers are provided with at least one month's notice.
- FNOS must make every effort to ensure that price increase notifications reach the correct point of contact at each ISP and should provide an archive of past pricing notices on their ISP portal.
- Once they are notified of an increase by an FNO, ISPs should endeavour to pass on notices of a price increase to their customers without undue delay,
- In situations when an FNO is not able to provide a full 70 days notice to an ISP, and the ISP is thus not able to ensure that all of its customers are notified timeously, then it is recommended that FNO's waive the cancellation fees for services cancelled by customers to whom an ISP was unable to send one month's notice.

FNO best practice checklist

- *Do endeavour to provide at least 70 days notice of price increases to ISPs.*

ISP best practice checklist

- *Do ensure that terms and conditions adequately deal with any price increases during the terms of the customer's contract.*
- *Do communicate any price increases promptly to customers.*

C5: Service upgrades

From time to time, FNOs implement "free" speed upgrades on their networks. This was most notably done, laudably, by many FNOs during the pandemic. FNOs also sometimes implement market-wide upgrades because these are a necessary part of infrastructure upgrades, or because lower speed connections are no longer supported. A "forced" upgrade is one imposed on all customers without each customer requesting or consenting to the

upgrade. It should be noted that it is frequently not possible for FNOs to offer upgrades on a selective basis. Typically all users on an upgraded network must be upgraded at the same time.

Free doesn't always mean free
A "free" upgrade of the speed of a customer's connection does not mean that there are no costs associated with that upgrade for the ISP providing the service. An ISP may need to upgrade Network-to-Network Interfaces ("**NNIs**") to support additional traffic, and will have to provision additional internet capacity in order to provide the faster service to its customers. In order to provision these upgrades, ISPs are sometimes forced to enter into long-term contracts for the additional services, or pay for overages.

Upgrades trigger traffic spikes
Further, a market-wide service upgrade inevitably triggers a significant spike in usage immediately following the upgrade, as customers test their higher-speed services. Even if the steady state impact on an ISP does not require substantial network upgrades, the ISP is forced to provision additional services to support this usage spike.

Some customers would prefer to pay less for the same service
Not all customers want a much faster service for a small increase in price. Some of them would prefer to keep paying less for the lower speed service. Forcing all customers to upgrade inevitably results in cancellations from some unhappy customers. Further, not all Customer Premises Equipment (CPE) can support higher speed connections. Such customers need to obtain and install new CPE.

Time is needed to implement changes
ISPs need sufficient notice of upgrades to prepare communications with their clients and to provision correctly for services which may be billed in advance. Poorly planned service upgrades have a significant customer support impact.

The following best practice recommendations are made:

- ISPs should set out the possibility (and consequences) of forced upgrades in the terms and conditions for fibre services.
- FNOs should engage with their ISP partners prior to implementing speed upgrades. Where feasible, FNOs should work together with their ISP partners in formulating joint marketing, communications and announcements about forced upgrades.
- If upgrades will have a significant impact on the ISPs' networks, at least 45 days advance warning should be provided of those upgrades by the FNO.
- FNOs should refrain from advertising upgrades as "free" to the customer. This is misleading since what is actually meant is that there is no *direct* additional per user cost to the ISP offering the service.
- When promoting upgrades, FNOs and ISP should make consumers aware that some end-users may need to upgrade their CPE to take advantage of the upgrade.

- Some customers may elect not to take advantage of an upgrade and, assuming that it is technically possible to revert the speed of their line, may wish to do so in order to pay less. This situation should not be treated as a service change by the FNO. An ISP should not incur costs because a customer reverts back to a service they had been forced to change from.

FNO best practice checklist

- *Do engage with ISPs well in advance of implementing and forced upgrades.*
- *Do provide at least 45 days notice of any forced upgrades.*
- *Do not advertise or market upgrades as "free" to the customer.*
- *Do not treat customers reverting a forced upgrade to the previous speed as a "downgrade".*

ISP best practice checklist

- *Do make sure terms and conditions explain the possibility of forced network upgrades.*
- *Do make consumers aware that some network upgrades will require new CPE.*

C6. Change of customer

A change of customer is when the end-user the ISP is selling a service to at a particular location changes. In other words, the location of the fibre installation remains the same and the same ISP is still using that fibre to provide a service. What changes is the identity of the customer and possibly the exact nature of the service (e.g. the speed).

For a change of customer, the following best practices are recommended:

- A change of customer is not a new installation. An FNO should not charge an installation fee for a change of customer at a location.
- If the nature of the service offered by the ISP changes, it may be necessary for an FNO to make certain configuration changes to its network to support this. In such cases the FNO may charge an activation fee.
- A new **installation** requires that equipment or infrastructure needs to be installed or updated at the customer's premises. A new **activation** does not. A good rule of thumb is that if it is possible to get a service up and running using only remote provisioning, then that is a new activation and not a new installation. Fees for both activations and installation should be based on the relative cost to the FNO. Consequently, where an FNO levies an activation charge, this should be substantially less than an installation charge.
- If only the identity of the customer changes, this has no impact at all on the FNO, so neither an installation fee nor an activation fee should be charged.

FNO best practice checklist

- *Do distinguish between installation and activation charges.*

C7. Migration between ISPs

The migration of a fibre line from one ISP to another is currently a significant pain point for the industry and consumers. Situations triggering a migration include:

- Customers who wish to change ISPs simply because they have found a better deal or better service.
- Customers trying to change ISPs in an attempt to escape from a service contract with their current ISP, or to try to exploit trial periods offered by ISPs. Some customers are serial ISP hoppers, switching several times in quick succession.
- Services are frequently contracted by tenants rather than landlords. One tenant moves out and the new tenant orders a service from a different ISP.

Ideally the process for a migration involves the first ISP providing notice of cancellation to the FNO before the ISP gaining the line requests activation of that line. This does not always happen. In practice, FNOs are often asked to activate a service for one ISP when a different ISP is already linked to that line. Sometimes the ISP losing a customer simply fails to cancel the line with the FNO, but more often a customer fails to properly cancel their service with their ISP.

Further complications may occur when:

- What appears to be a migration of a line from one ISP to another is actually a customer trying to install redundant fibre services by having service agreements with two different ISPs. This means that an FNO cannot assume that a request from one ISP to provide services to a customer at a particular location implies that an existing service provided by another ISP should or will be cancelled.
- An FNO or ISP confuses two similar addresses. This can mean that a new installation is treated as a migration or the wrong line is transferred to the requesting ISP. Both situations result in a completely different consumer being disconnected.

All of this means that FNOs and ISPs need to have robust processes in place to correctly handle line migrations and resolve disputes. Several best practice recommendations follow:

- ISPs and FNOs should always double check customer addresses so that the wrong customer is not accidentally disconnected. There is a big difference between 20**B** Oak Road and 20**8** Oak Road. Mistaken disconnections should be promptly acknowledged and FNOs should make sure they have the ability to reconnect those customers within hours, not days. FNOs should avoid repeating mistaken disconnections and must make sure they have sufficient support staff and internal processes to deal with escalations from ISPs when mistakes do happen. FNOs should not rely solely on automated processes for dealing with disputes; some require manual intervention.
- Where technically feasible, FNOs should offer multiple services over the same line, even if that means charging two different ISPs for the same physical line to a particular location.

- ISPs should respect the wishes of a customer who wants to move to another ISP by notifying the relevant FNO of the correct date and in good time. ISPs should not unreasonably block a migration request or use illegitimate proof of residence to retain control of a line.
- The notice period that an FNO requires for a line to be changed to a different ISP should not be substantially longer than the time the FNO reasonably requires to implement any technical and administrative changes needed.
- As in the previous section, if a migration only requires an **activation**, and not a new **installation**, the FNO should charge only an activation fee and not an installation fee.
- An FNO should make sure that its service agreement with its ISPs provides clarity on what happens if a line is transferred to a different ISP by the FNO during the duration of that service contract.
- An FNO should always notify an ISP that a line is going to be migrated away from that ISP. The migration should not be done without giving that ISP an opportunity to dispute that migration.
- FNOs may provide ISPs with an indication of the number of past migrations of a particular line. This will assist ISPs understand the potential risk associated with that line. A high number of migrations likely indicates a location with a frequent change of tenant, which may require the ISP to pay special attention to service agreements and cancellations for that line.

Cases where there are disputes between different ISPs over a particular line are covered in the next section.

FNO best practice checklist
- *Do double check the address for any migration or new installation.*
- *Do offer multiple services over the same fibre line, if this is technically feasible.*
- *Do not have unnecessary notice periods for line migrations.*
- *Do distinguish between activation fees and installation fees for line migrations.*
- *Do cover the possibility and consequences of line transfers in agreements with ISPs.*
- *Do provide an indication of the number of previous migrations of a particular line.*

ISP best practice checklist
- *Do double check the address for any migration or new installation.*

C8. Managing disputes over lines

Unless there is a process in place to resolve conflict resulting from line migrations, the new customer at a location may be unfairly blocked from obtaining a service. However, an FNO must also be cautious about summarily terminating an ISP's access to a line, since this could place the FNO in breach of their service agreement with that ISP.

A dispute is said to arise if an ISP requests the activation of a line that an FNO currently has assigned to another ISP. This usually occurs when an ISP has not cancelled the line in question. The following recommendations are made for the handling of such disputes:

- Both FNOs and ISPs should take steps to confirm that a request from a customer who wants a service from multiple ISPs at a location is not accidentally treated as a migration. Typically such a request would be treated as a new installation instead of a migration.
- An FNO should inform both ISPs if it becomes aware of a dispute. A notification of a dispute should be actively sent to the ISP and should not require that an ISP log into the FNO's portal, as this could result in missed notifications, and incorrect customer terminations.
- ISPs and FNOs must cooperate to speedily resolve any line migration disputes that are preventing a customer from obtaining a service.
- When an ISP becomes aware that a dispute has arisen, it should seek clarity from its customer, and determine if the customer intends to migrate.
- An FNO must provide a mechanism for an ISP to request the transfer of a line currently held by a different ISP. This process should:
    - Require proof that the requesting ISP's customer is the most recent resident or property owner for the installed location. This is to ensure that the transfer is not fraudulent.
    - Inform the current ISP that transfer has been requested, and give that ISP at least 24 hours to respond.
    - Not terminate the current ISP if both the current and new ISP can provide equally recent proof of residence for their customers.
    - Promptly notify both ISPs once a decision is made about a disputed migration.
- If there is any sort of dispute the FNO should keep both ISPs informed of the status of a migration, and attempt to resolve the dispute well before the planned migration date.
- In general, if a migration is disputed, a request from a property owner should take priority over a request from the property owner's tenant.
- Disputes over which ISP a line is linked to can be caused by circumstances other than a request from a customer. There are, for example, situations where a line is linked to the wrong ISP because of confusion between two geolocation objects. FNOs should strive to make sure that their process for resolving disputed migrations can also resolve such situations.

FNO best practice checklist

- *Do inform ISPs when a dispute arises over a fibre line.*
- *Do provide a thorough and reasonable process for resolving line transfer requests that may be disputed.*
- *Do consider what other line disputes this process may need to resolve.*

ISP best practice checklist

- *Do seek clarity from customers when line migration disputes arise.*
- *Do not use a customer billing dispute as a reason to dispute a line migration.*
- *Do cooperate with FNOs to speedily resolve any line migration dispute that is preventing a customer from obtaining a service.*

C9. Service cancellations

Customers frequently fail to take their contractual obligations with their ISP into account when moving house, leading to breaches of their agreements due to non-payment. Some ISPs allow a customer to transfer a contract to a new location, but this is only viable if the ISP is able to provide an equivalent service at the new location. Some ISPs allow a customer to transfer their contract to the new tenant, but this requires the consent of all parties and is not always feasible, for various reasons.

These various scenarios mean that ISPs are not always diligent about notifying FNOs of customer cancellations, especially if a customer is locked into a contract and obliged to continue paying the ISP even though they are no longer using the service at the location it was installed. The ISP may not wish to cancel the service exactly *because* they are holding the customer to the terms of the agreed contract.

Given the above, it is recommended that:

- ISPs should take responsibility for cancelling the services of their clients with the relevant FNOs.
- FNOs and ISPs should encourage landlords and property owners to include clauses in leases and purchase agreements that cover the cancellation, transfer and/or ownership of fibre lines.
- ISPs should make it abundantly clear to customers signing long-term contracts that "I am moving house" is not a reasonable grounds for breaching those agreements. If an ISP offers the option of transferring an agreement to a new location or to a new tenant, the limitations of that offer should be made clear to the customer ("You can only transfer your service agreement to somewhere else that has open access fibre.")

  It typically takes up to three years for an ISP to recover the cost of subsidising a customer's installation and CPE, so a customer who cancels early reflects a significant cost burden for an ISP.

- Where there is no long-term contract in place between an FNO and an ISP for a particular access service, the ISP should not be required to provide more than 30 days notice of a cancellation.
- FNOs should provide the ability for an ISP to suspend a customer's line in cases where that customer has not paid the ISP for that service. A non-paying customer is often already in financial distress, and cancelling and reactivating a line may incur fees that the customer likely cannot afford.

FNO best practice checklist

- *Do not require that ISPs provide more than 30 days notice of a cancellation.*
- *Do provide ISPs with the ability to suspend a line when necessary.*

ISP best practice checklist

- *Do take responsibility for cancelling client services with the relevant FNOs when necessary.*
- *Do make it clear to customers that moving is not an acceptable way to escape a long-term service agreement.*

Property owner/landlord best practice checklist

- *Do include clauses in leases and purchase agreements to cover the ownership, installation, transfer and/or cancellation of fibre lines.*

C10. Cancellation fees

In addition to the above considerations of service cancellations, the following observations can be made regarding the fees associated with cancellations.

For fixed-term agreements (e.g. a 24-month service contract), the Consumer Protection Act ("**CPA**") prevents a company from imposing a punitive cancellation fee on a customer for cancelling a service early. However, it should be noted that:

- This applies to fixed-term contracts, and not month-to-month agreements.
- This does not prevent an ISP from recovering a pro-rata portion of any subsidised installation fees or equipment costs from a customer cancelling a fixed-term contract early.

The CPA applies only to agreements with consumers. It does not apply to agreements between FNOs and ISPs. If an ISP enters into a 12-month service agreement with an FNO, that FNO can hold that ISP liable for the full value of the agreement, even if the ISP's customer cancels the service after only one month. This creates a significant imbalance between the FNO and the ISP when it comes to the costs of cancellations.

Consequently, the following recommendations are made:

- If ISPs are subsidising the installation costs for a customer's services, in their agreements with customers they must make it clear that the customer becomes liable for the remainder of the subsidised installation cost in the event of an early cancellation.
- FNOs should take the imbalance created by the requirements of the CPA into account when imposing penalties on ISPs for the early cancellation of long-term contracts for customer access services.
- Where feasible, FNOs should support contract substitution. This means that when an ISP is forced to terminate a contract for one customer's service before the end of the contract term, the remainder of the contract term can be applied to the same service but using a different circuit. This retains the financial certainty for the FNO, without

penalising the ISP unduly when a customer cancels their service. Applying an activation fee in these circumstances is not inappropriate.

FNO best practice checklist

- Do allow an ISP to substitute contracts when feasible.

ISP best practice checklist

- Do make customers aware that they are liable for equipment and/or installation costs in the event of any early contract cancellation.

SECTION D: MISCELLANEOUS INDUSTRY ISSUES

Issues that do not fall neatly into the above sections are dealt with here.

D1. MTU size

The Maximum Transmission Unit ("**MTU**") is the largest size packet that can be transmitted across a data link. It is most used in reference to packet size on an Internet Protocol ("**IP**") network. MTUs are measured in bytes. ISPA recommends that FNOs (and all network operators) configure their networks so that a customer experiences an end-to-end IP MTU size of 1500 bytes. This is to prevent fragmentation for services which assume a minimum MTU size of 1500 bytes.

For most networks this can be achieved by implementing an MTU size of 1540 bytes, but care should be taken to ensure that tunnelling does not inadvertently reduce an implemented 1540 byte size to an effective MTU size below 1500 bytes. Networks built to support jumbo frames are automatically compliant with this recommendation.

In some cases, FNOs may be stuck with technology (such as PPPoE) that does not provide for an MTU size of 1540 bytes. In such cases, FNOs are encouraged to support an end-to-end IP MTU size of 1500 bytes on as much of their networks as technically feasible, and to implement the maximum possible MTU size on the rest of their networks. For PPPoE specifically, operators are encouraged to use the maximum size of 1492 bytes provided for in the PPPoE specification and to take note of RFC 4638 which outlines a solution that allows for MTU sizes greater than 1492.

FNO best practice checklist

- *Do support a minimum end-to-end IP MTU size of 1500 bytes.*

D2. Provision of mapping data

Accurate mapping data is an important tool for ISPs to be able to market services to potential customers. To this end:

- FNOs should provide ISPs with accurate mapping data for their networks.

- Maps should be regularly updated and/or clearly indicate new areas where services are planned to be rolled out. Understanding which new customers to market services to is critical for ISPs to grow their businesses.
- As with all other information about an FNO's network, mapping data should be provided on an equal basis to all ISPs.
- Map data should be provided to ISPs in an exportable format. Providing only a tool for an ISP to manually query availability at a specific location is not a sound approach. ISPs typically sell the services of multiple FNOs and need to be able to integrate mapping data from multiple networks to be able to correctly advise customers on service availability.

Although Keyhole Markup Language ("KML") files are currently the most ubiquitous, FNOs should take cogniscance of the Spatial Data Infrastructure Act (Act 54 of 2003) which requires the inclusion of metadata and be in an interoperable format.

Recommended formats (in order of preference):

- A metadata catalogue service or portal system which exposes multiple data distribution methods for source data.
- A live web service that is compatible with Open Geospatial Standards (e.g. OGC API/WFS).
- A proprietary live web service (e.g. ArcGIS REST API).
- GeoSpatial Interchange Formats (KML/GeoJSON). This is more appropriate for lower accuracy data.
- GDAL Compatible Flat File Format (GeoPackage, Geoparquet). This is more appropriate for high accuracy data.
- Proprietary Flat File Format (Shapefile, FileGDB).
- Non-spatial file formats (e.g. CSV, TXT, XLSX). These should use WKT geometry definitions where possible, otherwise, latitude/longitude fields.
- A non-standard live web service (e.g. third party API, custom geometry definitions).

FNO best practice checklist

- *Do provide up-to-date access to coverage maps to ISPs on a regular basis.*
- *Do include information on planned network roll-outs in mapping data.*

Acknowledgements

ISPA would like to thank the many individuals and companies who have contributed to the development of these recommendations so far, in particular ISPA's Operators Liaison and Fibre ISP Working Groups and representatives from Balwin Fibre, Dark Fibre Africa, FibreSuburb, Link Africa and Openserve.

It should be noted that the fact that a person or company has contributed to this document does not necessarily imply that they have also expressed support for these recommendations.

Feedback

If you would like to comment on this document, or provide any feedback or suggestions for future versions, please contact ISPA using the secretariat@ispa.org.za email address, with "Best Practice Recommendations" in the subject line. Your email will be acknowledged by the ISPA team once we have received it.

Version history

Version	Date	Notes
3.2	2024-08-28	Added a tip in section B1. Added additional SLA requests. Changed the title of B4 to Customer premises equipment and added some recommendations on CPE installations. Added additional ISP requests to C1. Added a list of required processes to C1. Added additional requirements for notifications to C4. Added notification requirements to C7. Replaced a wordy section on withdrawing cancellation notices with a recommendation to support line suspensions. Rewrote the introductory section on cancellation fees to better reflect the applicability of the CPA. Added a block detailing different map formats. Various minor edits.
3.1	2023-12-05	Additional content added to the section on customers' personal information to deal with FNO collection of customer data in some circumstances, and to emphasise the need for valid data operator agreements being in place. The section on migration of lines between ISPs has been split into two, with a new section added to cover disputed line transfers. Various other minor edits were made.
3.0	2023-08-21	The document was substantially updated, with particular emphasis on which parties are responsible for handling customers' personal information. New sections were added to cover customer personal information, access to network information, a change of customer, migration between ISPs, and provision of mapping data. Several other sections were updated.
2.0	2023-01-25	The entire document was significantly restructured and redrafted. Substantial additional content was added based on consultations with ISPA's members and FNOs. Further amendments were made based on suggestions from ISPA's Fibre ISP and Operators Working Groups.
1.5	2022-09-29	Feedback from Openserve was added. The acknowledgements section was added.
1.4	2022-07-27	Additional sections were added. Positive steps were added to most sections.
1.3	2022-06-10	The sections were reordered and all sections reviewed and edited.
1.2	2022-06-07	Substantial revisions were made based on feedback from ISPA's Operators Working Group.
1.1	2022-05-16	The document was reformatted, numbering was added, and minor

		light editing performed.
1.0	2021-09-21	This was the initial draft.