NBNCo Limited

Connection Guide – Smart Places (Activation) Generic Version

nbn Confidential: Commercial Version 1

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1 Introduction

This document is provided for information purposes only and the intended audience are Retail Service Providers (RSP's), Business Customers, Contracted End Users, or a licenced third-party customer representative.

This guide is intended to provide direction relating to the installation & activation of the Small Form-Factor Pluggable (SFP) single port NTD and the Customer Connecting Cable to support the **nbn™** Smart Places Product. Once the SFP-NTD and Customer Connecting Cable have been correctly installed, activation of an AVC can proceed through the chosen RSP.

Note: The Customer Connecting Cable can only be installed by a Registered Cabler accredited by the Australian Communications and Media Authority (ACMA)

Terms not defined in this document have the meanings given in the Wholesale Broadband Agreement.

1.1 Inconsistency

As per clause C4.3 of the Head Terms, to the extent there is any conflict or inconsistency between the terms of:

(a) Wholesale Broadband Agreement;

(b) the terms of an applicable Authorisation to Alter Document; and

(c) this document

that inconsistency will be resolved by giving precedence to them in the order set out above.

1.2 Safety Information

If this is the first time using this document, please start with Safety Section 3 then progress to section 1.3

1.3 Dependencies

The following dependencies must be completed prior to installation of the SFP.

Responsible Party	Action	Summary of Action
nbn	Construction Activities	**nbn** performs Construction of fibre to the Smart location. The cable will be installed into the location or coiled in a pit adjacent to the location depending on the Construction request (full or part build). At completion of construction, **nbn** will inform the Retail Service Provider that the location is ready for service and any relevant detail pertaining to the build e.g. cable or pit location will be provided through the construction completion process

Responsible Party	Action	Summary of Action
nbn	Location ID assigned	**nbn** assigns a Location ID to the designated endpoint on the completion of construction and makes the location ready for service.
Retail Service Provider	SFP NTD	**RSP** Assigned and responsibility of the RSP to send SFP-NTD to site in preparation of Service Activation
Retail Service Provider	RSP allocates SFP to each site	**RSP or End-User** installs the **SFP** into their compatible customer equipment at the Smart Places location and plugs in the Customer Connecting Cable. Note! in some cases the Customer Connecting Cable may need to be hauled into the Smart Premises Location Section 2.2 step 5 outline how the cable should be secured.

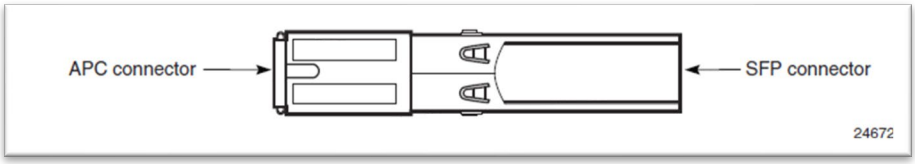
Note: Keep the single port SFP NTD out of direct sunlight. Prolonged exposure to direct sunlight can damage the unit.

2 Smart Places Components

2.1 Typical Hardware

Figure 1: Single port (SFP NTD)

Figure 2: SFP-NTD Connections



Customer Connecting Cable (CCC)

There are 2 types of Customer Connecting Cable with different tethering caps.

The first type is the SJL (Segment Joint Location) this is a fully connectorised cable with a hauling sock attached at the end see figure 3.

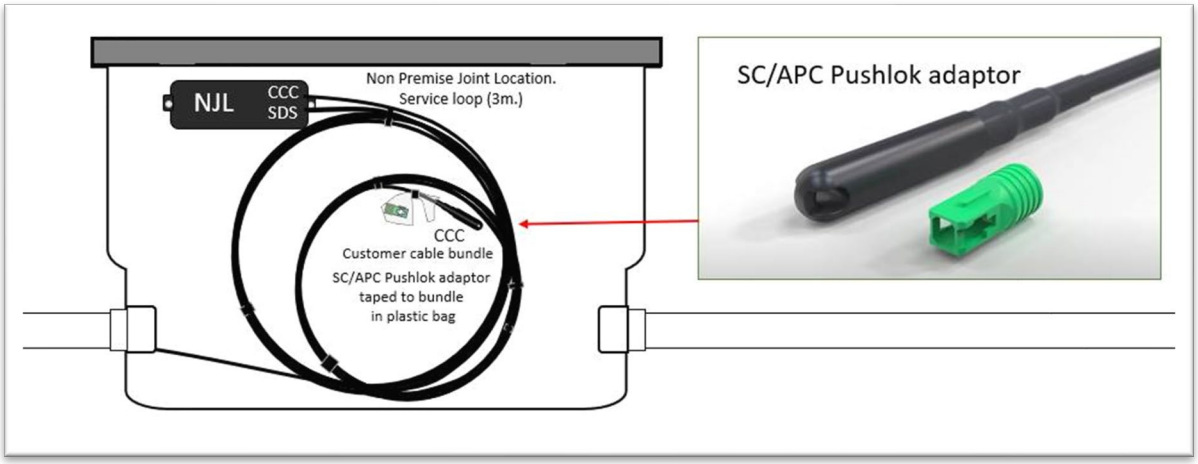
The second type is the NJL (Network joint Location), this is a special CCC designed for installation where Duct space is limited on the customer side of the connector. The NJL has a specialised hauling cap see figure 4 that is screwed on and needs to be removed once the installation is complete and replaces with a Pushlok adaptor cap see figure 5.

Figure 3: Example SJL CCC with APC connector

CCC cable with tethering cap attached (draw cable is an example only)

Figure 4: Example NJL CCC with screw on hauling cap

Figure 5: Example NJL CCC with Pushlok adaptor



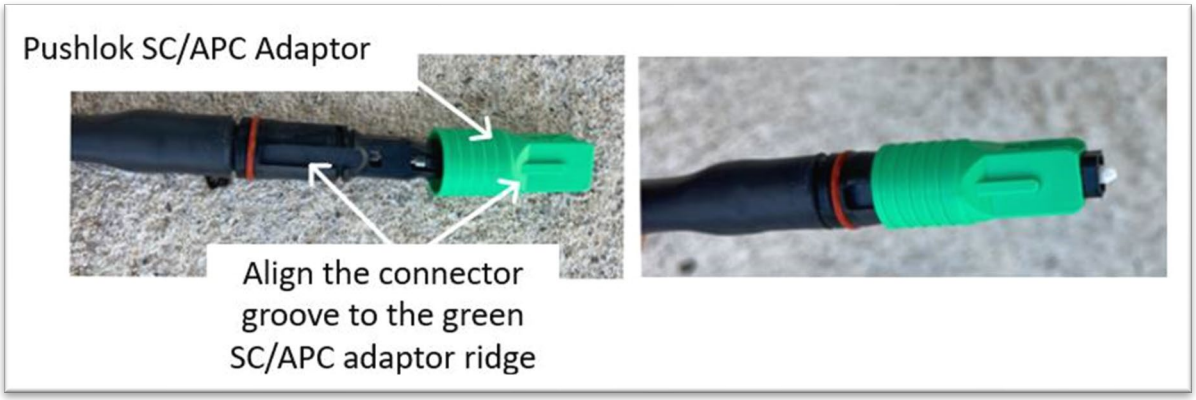
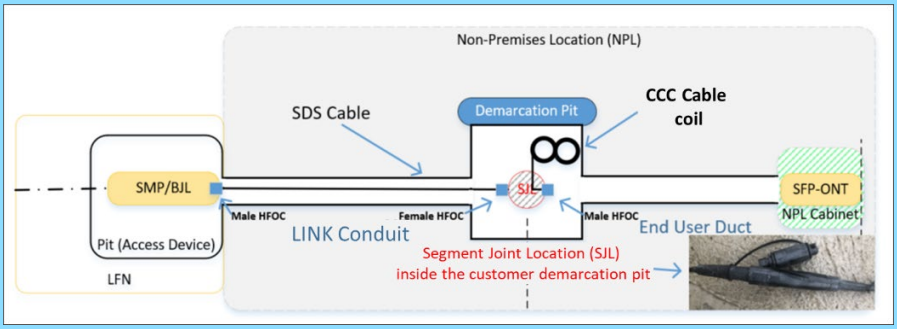
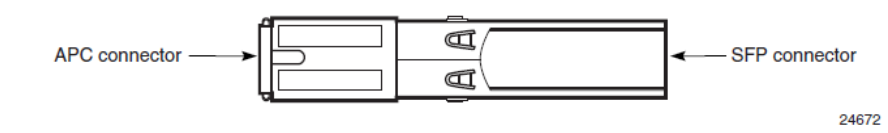


Figure 6: Examples of the Pushlok SC/APC (Standard Connector Angle Polished)

2.2 Installation of Customer Connecting Cable and SFP-NTD:

Note: The Customer Connecting Cable can only be installed by a Registered Cabler accredited by the Australian Communications and Media Authority (ACMA).

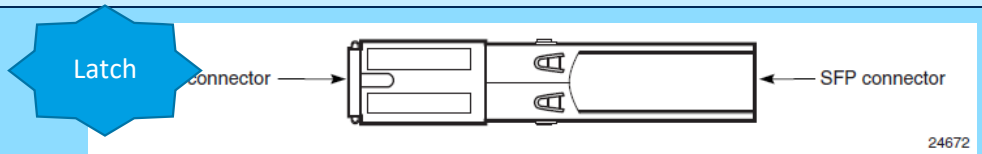
Step	Procedure
	If the Customer Connecting Cable needs to be installed start at step 1. **If the Customer Connecting Cable is installed, then start at step 6.**
Step 1	Locate the Customer Connecting Cable (CCC), it can be found in the Telecommunications/Demarcation Pit adjacent to the Smart Location.
Diagram #	 CCC coiled inside the demarcation pit The CCC can be found coiled in the telecommunication/demarcation pit.
Step 2	 (Example of Demarcation Pit)
Step 3	Next locate the end of the conduit/duct that connects the demarcation pit to the Smart Location e.g. street cabinet, making sure there is enough room within the conduit to draw the CCC through. Note! minimum conduit size suitable for the CCC is P20.
Step 4	Next attach a suitable draw cable to the tethering end of the CCC and then carefully draw it through the conduit/duct from the demarcation pit into the Smart Location e.g. street cabinet take care not to kink or break the cable.
Step 5	Next with the CCC is inside the cabinet/asset route it in a way that will not damage the cables and allows for easy connection to where the SFP-NTD will be located. Secure the CCC with plastic or Velcro cable ties or similar fastening device being careful not to crush the cable.
Example	 (Example CCC installation inside Street Cabinet)

Step	Procedure
Step 6	Next installing the SFP-NTD take note of the serial number it can be found on the package or the device (Serial Number ALCLFA######), the RSP will need this to complete the service activation. For Contracted End Users - Follow the instructions provided by your Retail Service Provider on how they want this information captured and communicated.
Step 7	It is best practice to power down the customer equipment before plugging the *SFP Connector end* of the SFP NTD directly into your equipment socket. 
Step 8	Your equipment should now be powered on “Wait 30 Seconds before proceeding”.
Step 9	Check your/the customer equipment is active and that any status indicator is showing that the SFP-NTD is powered on.
Step 10	Next carefully remove the black rubber protection cap from the APC connector end of the SFP-NTD.
Step 11	Next carefully remove the protection dust cap off the end of the CCC taking care not to damage or dirty the APC connector and store the dust cap in a convenient place within the cabinet/enclosure. Carefully orientate and plug the APC connector into the APC connector end of the SFP
Step 12	The site is now ready for activating the service follow the procedure in 2.2 – SFP Activation.

Note: Keep the single port SFP-NTD out of direct sunlight. Prolonged exposure to direct sunlight can damage the unit.

Figure 7: Examples of SFP-NTD and CCC

2.3 Removing the SFP-NTD

Step	Procedure
	When there is a need to remove or replace the SFP
Step 1	Locate the SFP-NTD and carefully disconnect the CCC by gripping the APC **connector** and pulling it out of the SFP-NTD. Warning do not pull on the CCC take care to disconnect it.
Step 2	Once the CCC is removed replace the dust cap then proceed to remove the SFP by folding down the spring-loaded latch (see figure below) on the APC connector end of the SFP-NTD. Carefully apply pressure by pulling the latch and SFP-NTD at the same time. The SFP-NTD should come out of the socket once its removed, take care not to damage it.
Step 3	To install the SFP-NTD follow the procedure starting form step 6, 2.2 Installation of Customer Connecting Cable and SFP-NTD.
	

2.4 SFP-NTD Activation

Responsible Party	Action	Summary of Action
Business Customer / End-User	Business customer contacts their Retail Service provider	Business Customer / End-User Contacts their Retail Service provider advising that the SFP-NTD is installed and powered on and the CCC is plugged in. Customer / End-User **provides RSP with** • Serial Number (Example: ALCLFAxxxxxx) • Address of site the SFP-NTD located and any reference information • Location ID if available • Photo of Installation (optional)
Retail Service Provider	Smart Places SFP Activation	**Retail service provider follows the Smart Places® activation process.** **nbn will require the serial number to be keyed in at the time of placing the Smart Places order.** • Serial Number (Example: ALCLFAxxxxxx) • **nbn** Location ID • Photo of Installation (optional)

2.4.1 Note on Service Activation

This guide covers the installation of the Customer Connecting Cable and SFP-NTD. Activating the service is covered by the Wholesale Broadband Agreement (WBA) Smart Places Operations Manual. F

3 Safety

Note to Business Customer and End-users if you think there may have been contamination introduced while following this guide, please reach out to your retail service provide (RSP) for advice on what to do next.

3.1 Hazards, risks, control measures and safe work practices

	**WARNING: Never look directly into the end of a fibre that may be carrying laser light.** Laser light can be invisible and can damage your eyes. Viewing it directly does not cause pain. The iris of the eye will not close involuntarily as when viewing a bright light. Consequently, serious damage to the retina of the eye is possible. Should accidental eye exposure to laser light be suspected, arrange for an eye examination immediately.
	**WARNING: Laser Handling Precautions.** DO NOT use magnifiers in the presence of laser radiation. Diffused laser light can cause eye damage if focused with optical instruments. Should accidental eye exposure be suspected, arrange for an eye examination immediately.
	**CAUTION: Cleaved or broken glass fibres are very sharp and can pierce the skin easily.** Do not let these pieces of fibre stick to your clothing or drop in the work area where they can cause injury later. Use tweezers to pick up cleaved or broken pieces of glass fibres and place them on a loop of tape kept for that purpose alone. Always dispose of fibre shards in an approved container. Good housekeeping is very important.
	**CAUTION: Safety Glasses** NBN recommends the use of safety glasses (spectacles) for eye protection from accidental injury when handling chemicals, cables, or working with fibre. Pieces of glass fibre are very sharp and have the potential to damage the eye.
	**CAUTION: Safety Gloves** The wearing of cut-resistant safety gloves to protect your hands from accidental injury when using sharp-bladed tools is strongly recommended.

3.1.1 Safety Information:

- Hazardous electrical voltages and currents can cause serious physical harm or death. Always use insulated tools and follow proper safety precautions when connecting or disconnecting power circuits.
- Make sure all sources of power are turned off and have no live voltages present on feed lines or terminals. Use a voltmeter to measure for voltage before proceeding.
- Always contact the local utility company before connecting the enclosure to the utilities.
- This equipment is Electro Static Discharge (ESD) sensitive. Proper ESD protections should be used when connecting or removing the cables to or from the ONT.

3.2 Fibre Handling General Principles

- Never look into a fibre directly – always assume laser radiation is present.
- Safe Working Practices & Optical Connector Cleaning practices shall be complied with at all times.
- Always follow correct ESD control and prevention techniques when handling static sensitive devices, this is also generally recommended when only handling fibre patch cord and pigtail connectors.
- Never touch the end face of an optic fibre connector with your fingers.
- Never twist or pull forcefully on the fibre cord.
- Never reuse any cleaning sticks or wipes after full use.
- Never touch the cleaning area or material of the wipe, stick or tool.

3.3 Electro Static Discharge Precautions

- Components of optoelectronic devices can be damaged by static charges generated by operators and equipment. It is important to take precautions to eliminate static sources in the work area.
- Installation staff shall follow correct ESD control and prevention techniques when handling static sensitive devices.
- It is known that under certain conditions statically charged airborne dust particles can be attracted to fibre connectors being handled by personnel. The incidence of this occurring can be reduced if ESD control and prevention techniques are applied when handling fibre connectors.

3.4 Optical Fibre Safety

- Installation staff shall be aware of the Health & Safety risks associated with optical fibre equipment lasers.

3.5 Laser Radiation

- Never look directly at the end of the Fibre. Most fibre optic lasers are totally invisible to the human eye and will cause permanent damage. The endfaces of Fibre connectors MUST NOT be examined through optical handheld microscopes whilst the laser is transmitting irrespective of the optical filter fitted.
- Before commencing tests, staff shall be fully aware of and comply with all appropriate laser safety issues and precautions.

4 Optical Fibre Interface

4.1 Contamination Overview

CONTAMINATION IS THE #1 SOURCE OF TROUBLESHOOTING IN OPTICAL NETWORKS.

A single particle mated into the core of a fibre can cause significant back reflection (also known as Return Loss), insertion loss, and equipment damage. Visual inspection is the only way to determine if fibre connectors are truly clean before mating them.

By implementing a simple yet important process of proactive visual inspection and cleaning, poor optical signal performance and potential equipment damage can be avoided.

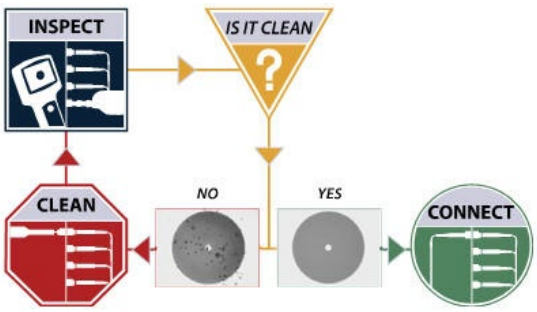


Figure 4 – Optical Connector Inspect/Clean/Connect Process

4.1.1 Good Fibre Connection

There are 3 basic principles that are critical to achieving an efficient optic fibre connection:

1. Optimal Core Alignment
2. Physical Contact
3. Clean Connector Interface

4.2 Optical Fibre Cleaning Interface Cleaning Process

Dry Cleaning

Simple dry cleaning wipes including many types of lint free wipes and other purpose built wipes are available. This category also includes purpose built optic fibre connector cleaning cassettes and reels, e.g. Cletop cartridges.

Warning! Exposed wipes can easily become cross-contaminated in the field. Cleaning material must be protected from contamination until just prior to use.

Wipes should be used in the hand or on a soft surface or resilient pad. Use on a hard surface can cause damage to the Fibre. Ensure not to use the surface of the wipe that you handled as this can contain finger grease residue.

Figure 6 – Examples of Dry Cleaning Wipes and Tools for Optic Fibre Connectors