

MASTER SERVICES AGREEMENT

SERVICE DESCRIPTION



SERVICE DESCRIPTION: FLEXWAVE

PART A – PRODUCT OVERVIEW

FlexWave is a private line connectivity service.

FlexWave circuits enable point to point linking of site equipment within and between New Zealand cities.

A FlexWave circuit provides full duplex transmission of symmetrical high bandwidth digital data between two locations.

PART B – FLEXWAVE SERVICE

1. NETWORK ARCHITECTURE

- 1.1 FlexWave is based on Wavelength Division Multiplexing (WDM) technologies that enable multiple client signals to be securely transported over a single fibre path.
- 1.2 One New Zealand’s optical transport networks provide the foundation for delivery of FlexWave Services. These networks are composed of sets of optical network elements connected by fibre links
- 1.3 The data signals produced by Customer Premise Equipment and presented on FlexWave circuits (aka client signals) are conditioned into Optical Transport Network standard forms by One New Zealand transponder equipment prior to transmission on optical channels.

2. INTERFACE TYPES

The FlexWave Service offers a choice of standards based interface protocols including:

- Gigabit Ethernet
- Synchronous Digital Hierarchy (SDH)
- Optical Transport Network (OTN)
- Fibre Channel/FICON.

2.1 The circuit speeds supported for each interface protocol are shown in the table below.

| Client Protocol | Circuit Speeds | | | | |
|--|---------------------------------|--|---|-----------------------|------------------------------------|
| Ethernet | 1Gbit/s | 10Gbit/s | 40Gbit/s | 100Gbit/s | |
| Synchronous Digital Hierarchy (SDH) | 2.488Gbit/s (STM-16 / OC-48) | | 9.953Gbit/s (STM-64 / OC-192) | | 39.813Gbit/s (STM-256 / OC-768) |
| Optical Transport Network (OTN) | 2.666Gbit/s (OTU1) | 10.709Gbit/s (OTU2) 11.049Gbit/s (OTU1e) 11.095Gbit/s (OTU2e) | 43.018Gbit/s (OTU3) 44.571Gbit/s (OTU3e1) 44.583Gbit/s (OTU3e2) | | 111.810Gbit/s (OTU4) |
| Fibre Channel / FICON | 1.0625Gbit/s (1GFC) | 2.125Gbit/s (2GFC) | 4.250Gbit/s (4GFC) | 8.500Gbit/s (8GFC) | 10.519Gbit/s (10GFC) |

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3. RESILIENT CONNECTIONS

- 3.1 The FlexWave Service provides a non-resilient single path unprotected connection between two locations. Should the circuit path be interrupted in the event of a fibre cable cut the Service will cease to operate until the fibre path can be repaired within the One New Zealand network.
- 3.2 For applications where high availability is required FlexWave can be engineered to provide a resilient or protected connection subject to a positive Feasibility Study (in our reasonable opinion) being carried out by us. This arrangement consists of two diversely routed circuits and uses optical protection switches at each endpoint. In the event of a fibre cable cut to the active circuit the service will automatically failover to the standby circuit.

4. NETWORK AVAILABILITY

- 4.1 The Service is not available to customers where we do not have a suitable One New Zealand fibre access network at a service delivery address. If the Service is available, some variants of the service (e.g. resilient connections) may not be available depending on the access infrastructure available at a site.
- 4.2 The availability of One New Zealand's fibre access network to support FlexWave is based upon geographic and other considerations and so is not guaranteed.

PART C – PRICING

5. MONTHLY RECURRING CHARGES

- 5.1 Refer to the Pricing Schedule for details of the applicable FlexWave circuit charges.

6. CIRCUIT LIST

- 6.1 Refer to the Pricing Schedule for a list of FlexWave circuits including details of the circuit endpoint site address locations and the associated One New Zealand site codes.

7. INSTALLATION CHARGES

- 7.1 A standard Installation Charge will apply for installations where we consider facilities to provision the FlexWave circuit are largely intact and no significant network augment or extension activity is required.
- 7.2 A Non Standard Installation Charge will apply for installations where we consider facilities to provision the FlexWave circuit are not intact and significant network augment or extension activity is required.

PART D – OTHER TERMS AND CONDITIONS

8. SPECIFIC TERMS

- 8.1 The FlexWave Service is provided for your use only. You will not on-sell a FlexWave circuit to a third party. Notwithstanding any other rights that we may have, we may immediately restrict or terminate the supply of the FlexWave Service if we believe that you are not complying with your obligations under this clause.
- 8.2 One New Zealand will supply a Demarcation Device for the purpose of delivering the Service to your Site. A Demarcation Device has no user configurable features. This equipment remains the property of One New Zealand and may also be used to deliver other One New Zealand data services.
- 8.3 You are responsible for providing a suitable location for Us to install the required One New Zealand equipment where the UNI is located. Any such equipment may not be interfered with or accessed by you and is exclusively managed by us.
- 8.4 You are responsible for the supply of suitable power for the installation and operation of any MSPP equipment (mains power 200-240VAC, 50/60Hz or other power supply specified by Us) Disruption of power will affect all Services supplied via the MSPP equipment. We are not liable for this.

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PART E – DEFINITIONS

In this Service Description the capitalised terms have the meaning as set out below:

| | |
|--|--|
| Customer Premise Equipment (CPE) | Equipment (whether you own or rent it) which is located at your Site for the purposes of receiving the FlexWave Service. |
| Demarcation Device | Terminal equipment supplied by One New Zealand that is located at your Site and forms part of a circuit. The demarcation device may consist of one of the following options: (a) A Multi Service Provisioning Platform node; or (b) An optical fibre bulkhead connector. |
| Feasibility Study | Means a study undertaken by Us to determine whether it is operationally possible and commercially viable to install a FlexWave circuit into a Site. |
| Multi Service Provisioning Platform (MSPP) | A network element that performs Wavelength Division Multiplexing. |
| Optical Transport Network (OTN) | A switching and transport technology defined in International Telecommunications Union (ITU) standard G.709 that enables multiplexing, routing, management, supervision and protection (survivability) of optical channels that carry client signals. |
| User Network Interface (UNI) | An access demarcation point at your Site that delineates the One New Zealand network boundary. |
| Wavelength Division Multiplexing | A fibre optic communications technology that enables multiplexing of multiple optical carrier signals onto a single optical fibre by using different optical frequencies (also referred to as wavelengths or colours) |