
Product Description
1Gbit/s & 10Gbit/s
Wholesale Un-contended
Product

(WUP)

Version Control

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Table of Contents

Table of Contents	3
1. Introduction.....	4
1.1 Wholesale Un-contended Product (WUP) 1Gb/s and 10Gb/s Overview.....	4
1.2 Key Features and Availability	5
2. Product Component	6
2.1 Wholesale Uncontended Product – Physical Network Termination Point.....	6
2.1.1 FSP1500CC-GE201 – 1Gb/s WUP NTU	6
2.1.2 NTU: ADVA FSP1500CC-XG210 - 10Gb/s WUP NTU.....	8
2.2 Mounting.....	11
2.3 Power Supply Units and Fusing Recommendations	11
3. Service Features	13
3.1 Network Interfaces	13
3.2 Fault Propagation – Access to Access Link Loss Forwarding.....	13
4. Commercial	14
4.1 Pricing.....	14
4.2 Terms and Conditions	14
4.3 Service Responsibility.....	14
4.3.1. open eir Responsibility.....	14
4.3.2. Operator Responsibility	14
5. Service Management.....	15
5.1 Ordering, Provisioning and Fault Management.....	15
5.2 Ordering the Service	17
5.2.1 Delivery Timelines.....	17
5.2.2 Confirmation of Delivery.....	17
5.2.3 Other orders –cancel and cease	17
5.2.4 Fault Management.....	17
5.2.5 Logging a fault.....	17
5.2.6 Fault handling process	17
5.3 Ordering a 2 nd WUP circuit.....	18
5.4 Billing.....	18
6. Supporting Documentation	19
7. Appendix 1 – Regulatory and Standards Compliance.....	19
8. Appendix 2 - Version History	19

1. Introduction

The purpose of this document is to provide a description of the open eir 1Gb/s and 10Gb/s Wholesale Uncontended Product (WUP). This document is subject to review and will be re-issued to reflect changes as new developments are introduced which shall be communicated in accordance with agreed practices. Any specific technology mentioned in this document is current as at date of issue and is for guidance purposes only. open eir reserves the right to adapt the technology used to deliver the WUP product.

This document is without prejudice to any future position that may be adopted by open eir in respect of WUP. It should be read in conjunction with the associated Wholesale documents (where appropriate, reference offer, process manual and SLA).

1.1 Wholesale Un-contended Product (WUP) 1Gb/s and 10Gb/s Overview

The Wholesale Uncontended Product (WUP) provides dedicated connectivity from one Operator nominated point of handover to another nominated point of handover ((CSH¹ to CSH), using a physical 1 or 10Gb/s fibre circuit delivered on open eir's **WDM network**.

An open eir NTU with a dual power connection of -48V DC or 220V AC will be installed in both the A-end and B-end sites. The physical network termination point will be at the physical port on the NTU. An SFP (SX or LX) for 1Gbit/s or an XFP (LR only)² for 10Gbit/s circuits will be installed in the customer facing port at Operator nominated sites, where appropriate. (Refer to Figure 1 below).

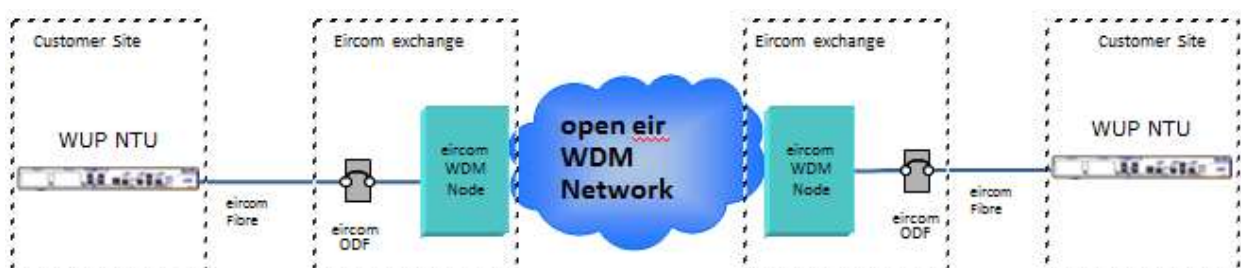


Figure 1: 1Gb/s and 10Gb/s WUP Services

¹ CSH is a method for delivering a WUP at a customer location, in this case Customer Site Handover

² 1000BASE-SX - distance capability up to 550 meters, 1000BASE-LX - distance capability up to 5 kilometres; XFP LR - 10Gb/s service for distance capability of up to 10km. All subject to survey and physical testing.

1.2 Key Features and Availability

- Dedicated point-to-point, 1Gb/s and 10 Gb/s un-contended physical link
- Available nationally from serving WDM nodes, subject to availability
- 24x7 monitoring provided as standard
- 99.85% availability
- 8 clock hour SLA Repair Time
- Ethernet (GbE) Presentation³
- **An Operator can implement diversity⁴ with a 2nd WUP order**

³ 1 Gb/s WUP can be specified with optical or electrical interface, 10Gb/s will be optical only

⁴ **An Operator can order a second WUP, however it's entirely the Operator's responsibility of how diversity is implemented, more see Section 5.3**

2. Product Component

The Wholesale Uncontended Product (WUP) provides point-to-point connectivity from one Operator nominated point of handover to another nominated point of handover, and only Customer Site Handover (CSH) is supported.

2.1 Wholesale Uncontended Product – Physical Network Termination Point

The open eir physical network termination point is the User Network Interface (UNI) port on the WUP **NTU that's** located at an **Operator's end user's premises**. open eir uses the ADVA FSP150CC-GE201 NTU to provide 1Gb/s WUP and the ADVA FSP150CC-XG210 NTU to provide up to 2 x 10Gb/s WUP.

2.1.1 FSP1500CC-GE201 – 1Gb/s WUP NTU

For 1Gb/s WUP service, the ADVA FSP150CC-GE201 (See Figure 2) is a 1U compact chassis, the dimensions of the chassis are:

- Width: without mounting brackets: 436mm
- Height: 1U 44mm
- Depth: without International Electrotechnical Commission (IEC) and optical connectors: 211.2mm. The depth allows the chassis to fit into a 300mm deep European Telecommunication Standardization Institute (ETSI) cabinet.



Figure 2: open eir 1Gb/s WUP NTU

Figure 3 and 4 illustrate the front and rear plates of the device, the main components are listed in Table 1 below.

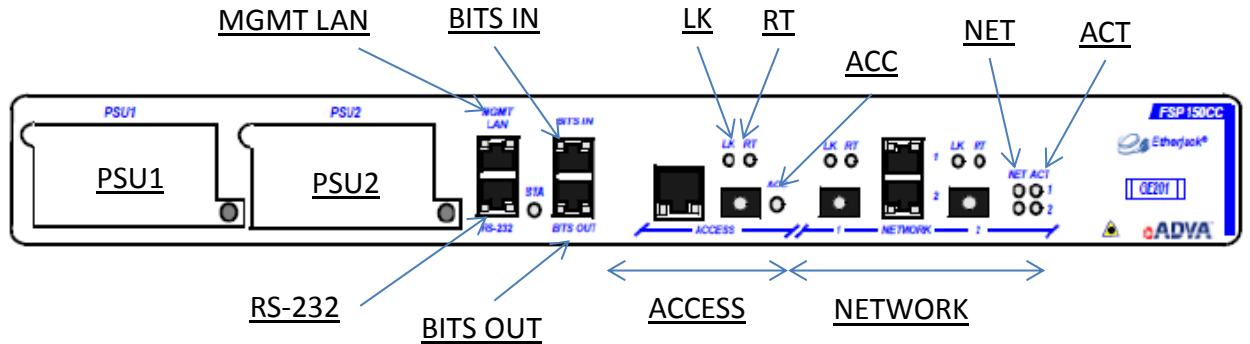


Figure 3: open eir 1Gb/s WUP NTU front panel view

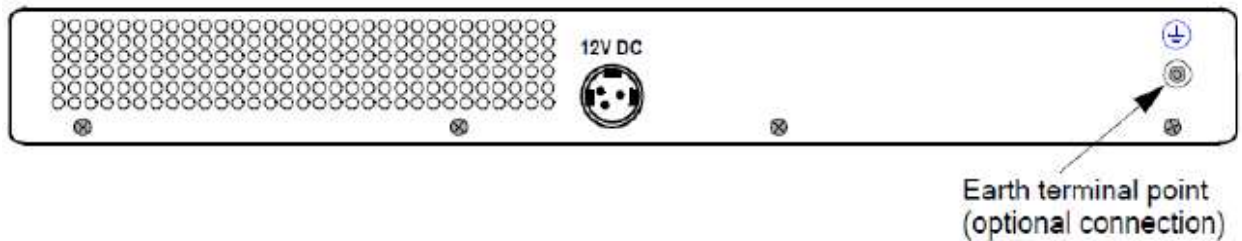


Figure 4: open eir 1Gb/s WUP NTU back panel view

Section	Connector (and Label)	Description
PSU 1 and 2 (Section 2.3 for details)	AC power 220V AC power connector	There are two (redundant) PSUs with integral Cable Tie support.
	DC Power (-48V DC power connector)	
Management	MGMT LAN	RJ-45 10/100BaseT Local Management LAN port supports auto-MDIX capabilities
	RS-232	RJ-45 Local Serial port for maintenance
Synchronisation	BITS IN/ BITS OUT	T1/E1 External Clock Input and Output, RJ-48c connectors (balanced 120 Ohm impedance)
Access Interface	Optical or Electrical	T1/E1 External Clock Input and Output, RJ-45 connector
Network Interface	NET 1 and NET 2	Two 1GbE network interfaces (labeled NET 1 and NET 2) that can operate in optical mode (1000BaseX) or Copper SFPs
	Electrical ports	Two network interfaces (not labeled) operate in electrical mode (1000BaseT) via RJ45 connector
Earth terminal point (rear panel)	Optical port	The rear panel includes an earth terminal (ground) point located on the right side of the unit
Power Input (rear panel)	12V DC power connector	This power input connector is for production and test use only, not for field operation

Table 1 : open eir 1Gb/s WUP NTU front and back connector description

2.1.2 NTU: ADVA FSP1500CC-XG210 - 10Gb/s WUP NTU

For 10Gb/s WUP service, the ADVA FSP1500CC-XG210 (see Figure 5) is a 1U modular chassis-based system, the dimensions are:

- Width: without mounting brackets: 436mm
- Height: 1U 44mm
- Depth: without International Electrotechnical Commission (IEC) and optical connectors: 218mm. The depth allows the chassis to fit into a 300mm deep European Telecommunication Standardization Institute (ETSI) cabinet.

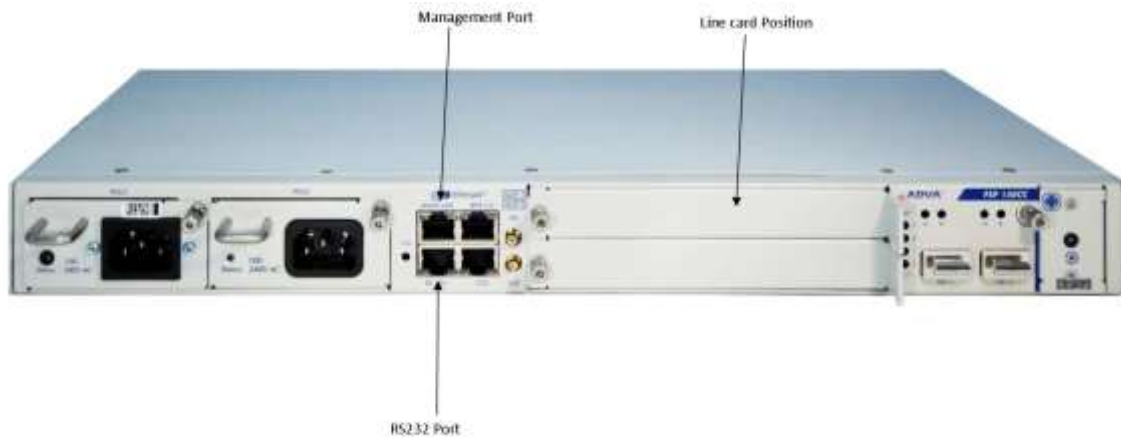


Figure 5: open eir 10Gb/s WUP NTU

Figure 6 and 7 illustrate the front and rear plates of the device; all interface connections except the environmental alarm input connector are located at the front panel. Table 2 lists the main components as below.

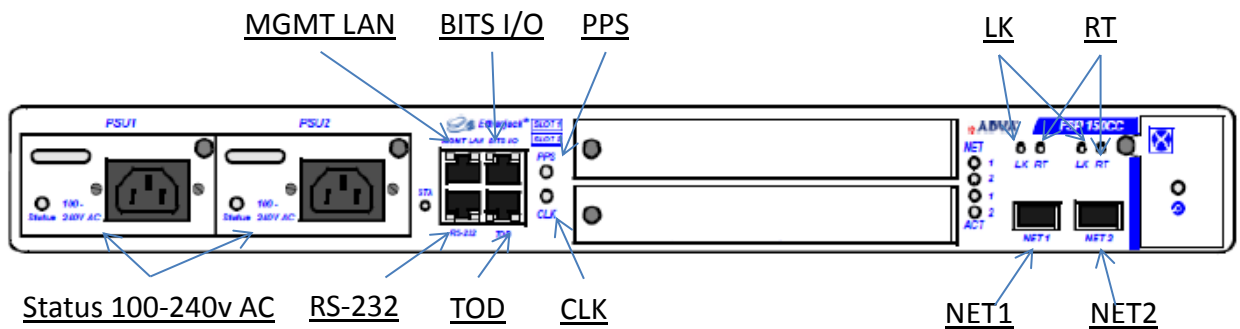


Figure 6: open eir 10Gb/s WUP NTU front panel view

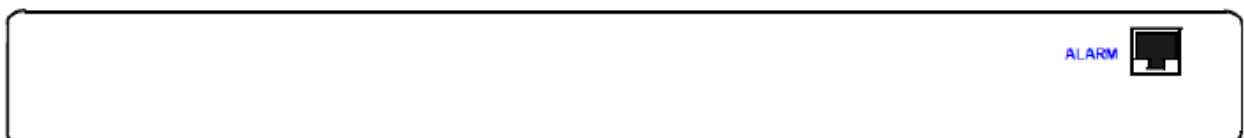


Figure 7: open eir 10Gb/s WUP NTU back panel view

Section	Connector (and Label)	Description
PSU 1 and 2 (Section 2.3 for details)	AC power 220V AC power connector	There are two (redundant) PSUs with integral Cable Tie support.
	DC Power (-48V DC power connector)	
Management	MGMT LAN	RJ-45 10/100BaseT Local Management LAN port supports auto-MDIX capabilities
	RS-232	RJ-45 Local Serial port for maintenance
Synchronisation	BITS IN/ BITS OUT	T1/E1 External Clock Input and Output, RJ-48c connectors (balanced 120 Ohm impedance)
	PPS	Pulse Per Second input, SMB - TTL (50 ohm impedance)
	CLK	External (10MHz) Frequency Reference Input, SMB connector
	TOD	Time of Day input, RJ-45 RS-422 input/output connector
Access Port Slots (Line Card Positions)	Optical	Two access port slots, support 1x 10Gb/s XFP/SFP+ interface card, configurable as either LAN PHY or WAN PHY
Network Interface	NET 1 and NET 2	Two 10GbE network interfaces (labeled NET 1 and NET 2) that can operate in optical mode (XFP)
Earth Terminal Point (rear panel)	Optical port	The rear panel includes an earth terminal (ground) point located on the right side of the unit
Alarm (rear panel)	RJ-45 connector	4 dry contact environmental alarm inputs which are accessed via an RJ-45 connector on the rear of the unit.

Table 2: open eir 10Gb/s WUP NTU front and back connector description

Management and Synchronization on 1Gb/s and 10Gb/s WUP services are open eir reserved service features that are not offered to Operators.

2.2 Mounting

The WUP 1Gb/s and 10Gb/ NTU are 1U chassis that may be positioned as a standalone unit, rack mounted or wall mounted. One mounting kit is applicable to a variety of mounting environments:

- Wall mounted
- Standard 19-inch rack mounted
- 19-inch extended mounting to ensure the optical fiber bend radius is maintained when installed in cabinets with doors
- Standard 23-inch rack mounted
- Standard ETSI rack mounted
- ETSI extended (recessed) mounting in order to ensure the optical fiber bend radius is maintained when installed in cabinets with doors

All brackets are designed to be screwed to the sides of the chassis and the screws supplied have ETSI compatible threads.

2.3 Power Supply Units and Fusing Recommendations

All components mountable in the FSP150CC (WUP NTUs) can be removed or inserted with the power on. Two redundant PSU modules are supplied by default with the WUP services. An Operator can order AC or DC power for either PSUs, or a combination of AC and DC powers.

The PSUs operate in HOT Standby (current sharing) mode and cross-powering is supported (i.e. one AC and one DC PSI can be used simultaneously). The FSP150CC may also be powered by a single PSU, if two PSUs are equipped and one PSU module fails or its input source fails, then the remaining module will continue to power the system without interruption to system function.

In the event of a complete system power failure, the system maintains internal voltages for a period that is sufficient to allow a dying gasp alarm to be raised via the in-band **management channels (SNMP trap or 802.3ah EFM “Dying Gasp” messages)**.

The open eir 1Gb/s WUP NTU is designed for use with 40 Watt PSUs, and the 10Gb/s WUP NTU is designed for use with 200 Watt PSUs.



The table below provides AC and DC power specifications and the minimum recommended fuse for each WUP NTU.

Product	Power Date Type	Specification	Minimum recommended Fuse (AMPs)
open air 1Gb/s WUP NTU	AC Voltage	120/240 VAC nominal, 50-60Hz nominal	1 (24W) or 2 (40W)
	Connector	IEC-60320/C 14 AC socket	
	-48 VDC Voltage	-48/-60 VDC nominal	
	Connector	Terminal block	
open air 10Gb/s WUP NTU	AC Voltage	90/364 VAC nominal, 50-60Hz nominal	4
	Connector	IEC-60320/C 14 AC socket	
	-48 VDC Voltage	-36/-72 nominal	5
	Connector	Terminal block	
	Wire Gauge	AWG 16	
Note: If both PSUs are DC PSUs, then two sets of power cables of the same length are required, one for PSU 1 and one for PSU 2.			

Table 3: PSUs of 1Gb/s and 10Gb/s WUP NTUs and Minimum recommended Fuse

3. Service Features

3.1 Network Interfaces

There are 2 Network ports (NET 1 and NET 2) on both 1 Gb/s and 10Gb/s WUP NTUs, and there is only 1 Access port on the 1Gb/s WUP NTU. On the 10Gb/s NTU, an Operator can order a second 10Gb/s WUP service on a separate line card if required.

3.2 Fault Propagation – Access to Access Link Loss Forwarding

The open eir WUP services (both 1Gb/s and 10Gb/s) support Access to Access Link Loss Forwarding, It is a selectable option on the WUP product order form.

Access to Access Link Loss Forwarding ensures high availability by turning the laser off on the optical transceiver(SFP) or by disabling both ports on the connected NTUs at each end of the WUP circuit if one port fails (for copper media). ----So a failure along the signal link is passed through and can be seen by both attached NTUs. When Access to Access Link Loss Forwarding is enabled, a failure in one WUP NTU disables the connection to the other WUP NTU, and making it aware that the link is lost.

The following diagram (Figure 8) illustrates how Access to Access Link Loss Forwarding has been implemented in the network.

The control messages to implement Access to Access Link Loss Forwarding are based on the standard Ethernet OAM protocol of IEEE802.3ah.

Link failures are caused by physical layer failures or other conditions such as an interface being placed into loopback. Link failures are detected by monitoring the physical hardware or by management actions. Access to Access Link Loss Forwarding triggers include:

- Link Down detection
- Receipt of Remote Fault condition from remote link partner
- Placing the port in facility loopback mode.

Link failures on one link/port propagated to a link partner (across the device or to a remote end of the service) by physically disabling the port. This is accomplished by one of the following actions:

- By turning the laser off on the optical transceiver (SFP)
- By turning the electrical port off for copper media (no link)

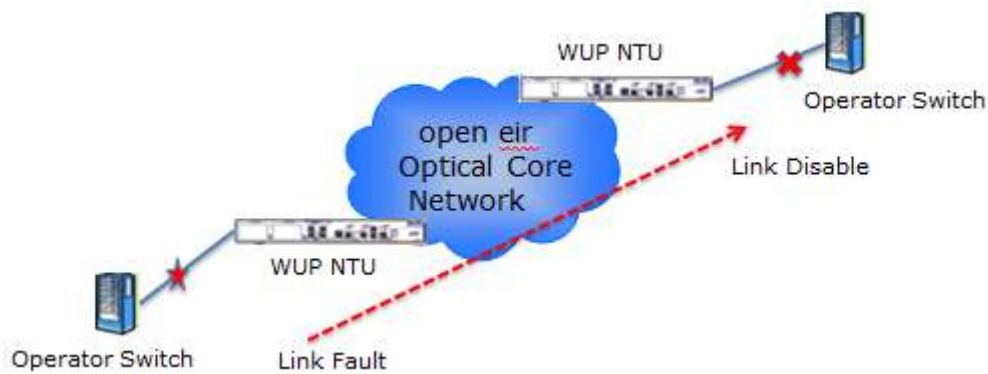


Figure 8: Access to Access Link Loss Forwarding

4. Commercial

4.1 Pricing

Contact your dedicated open eir Customer Relationship Manager to obtain a quote.

4.2 Terms and Conditions

Terms and conditions are published on the open eir website at www.openeir.ie.

4.3 Service Responsibility

4.3.1. open eir Responsibility

open eir has responsibility for the provision, repair and maintenance of the WUP from the open eir network to the Point of Handover (POH). For a list of relevant documentations published please refer to the open eir website [here](#).

4.3.2. Operator Responsibility

The Operator is responsible for connecting from the WUP NTU to its own equipment, and for any end-to-end testing of the service. The Operator must ensure that a suitable environment is provided for the WUP NTU, i.e. to ensure adequate space, power, environmental conditions and general facilities are available to install the WUP NTU.

5. Service Management

There are a number of processes that support this product from the initial forecasting and quotation through to billing as outlined in Figure 9.

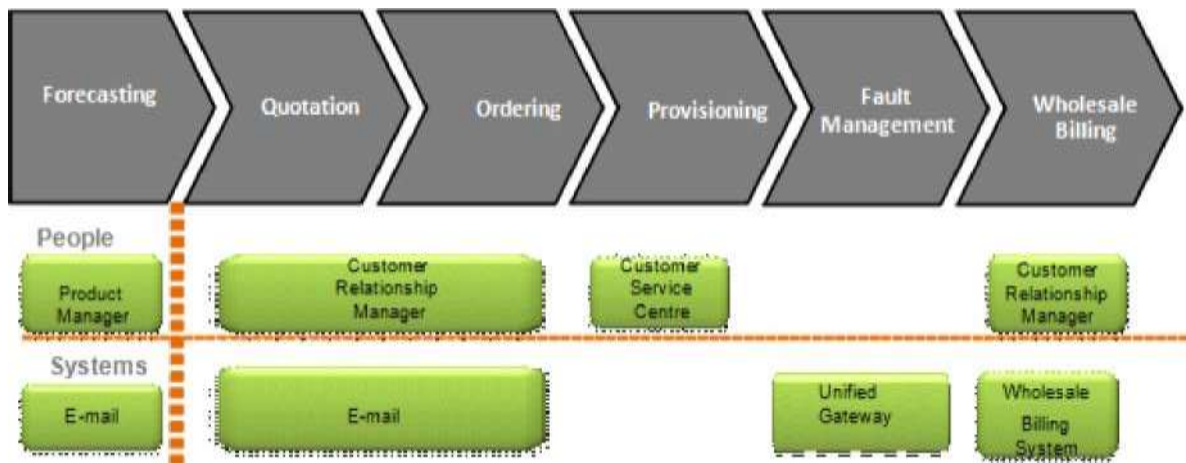


Figure 9: Process, people and systems overview

Prior to requesting the service an Operator may find product information on the open eir Wholesale website www.openeir.ie or discuss their requirements with their Customer Relationship Manager.

The quotation and ordering of 1/10Gbit/s WUP will be handled directly by the Operator's Customer Relationship Manager (CRM). The Operator can request a quote or place an order by e-mailing their CRM.

Provisioning and Maintenance processes are supported by the open eir Wholesale Customer Care Centre. After provision of the WUP any queries regarding billing should **be directed to an Operator's Customer Relationship Manager.**

Each of these processes is outlined in further detail below.

5.1 Ordering, Provisioning and Fault Management

The standard price applies where an Operator's end user premises is served by useable open eir owned duct (useable duct for fibre assumes that there is sufficient space in the duct to draw in a sub duct) and is within 500 metres of an available open eir access fibre which can connect to an open eir node.

The standard price does not include the costs associated with (1) installing any new duct or (2) clearing existing duct (3) new duct/poling and/or fibre build work (4) any civil works which may be necessary to establish a connection between the nearest open eir fibre and an Operator premises. All requests are subject to full site survey.

In Next Generation Access (NGA) locations, as published in the NGA 'Advanced Pre-Qual' File on the Unified Gateway (UG) and 'Max High (download) Speed' of 25M and above OR where the end user's premises is within 500 metres of the NGA fibre cabinet, the standard price will apply where the end user's premises is served from the NGA serving exchange - with the exception where bridge, dual carriageway or rail crossings are required where open eir reserves the right to recover any additional costs incurred.

For non-NGA locations or in NGA locations where the 'Max High (download) Speed' is below 25M, the standard price applies where the end user's premises is served by useable open eir owned duct and is within 500 metres of an available open eir access fibre which can connect to the serving open eir node. open eir reserves the right to recover any additional costs incurred.

For the avoidance of doubt, in all cases (NGA and non-NGA areas), an Operator is responsible for any costs associated with duct work within their end users own curtilage.

The Customer Relationship Management department will handle the ordering of the WUP circuits directly. The Operator can e-mail their Customer Relationship Manager to place an order.

Provisioning and Maintenance processes will be supported by the Wholesale Customer Care Centre and the Unified Gateway (UG) which will be used to report faults for the product via the UG web GUI.

Operators will be able to enter all the necessary data via a structured GUI screen for fault reporting. Once all the data has been entered the fault can be submitted. The UG will process and validate the relevant faults and will provide appropriate notifications in response.

Fault status updates will be provided back to an Operator and can be viewed via the UG order and fault tracking screens.

5.2 Ordering the Service

5.2.1 Delivery Timelines

WUP orders are delivered using fibre which is subject to survey and availability. The lead-time associated to these orders will be classified as Non-standard.

In cases where a fibre delivery is treated as Non-Standard, open eir will assess the order and provide a forecast due delivery date. The forecast due delivery date is calculated based on the time required in order to provide each element of the service.

5.2.2 Confirmation of Delivery

An order is deemed to be complete on provision of the WUP order, which establishes the service between the WUP NTU in the A-end Operator nominated handover site to the NTU in the B-end Operator nominated handover site. On completion of the order an Operator shall receive a Delivery Notification.

5.2.3 Other orders -cancel and cease

If an Operator wishes to cancel a WUP order before it is delivered, this order must be placed prior to installation of the service commencing.

The Operator may request a cease order on a WUP circuit providing all associated end customer traffic has either been moved or ceased prior to this. Please refer to process manual for further detail on cancel and cease order process.

5.2.4 Fault Management

Please refer the Inter-Operator Process Manual for further details on fault handling.

5.2.5 Logging a fault

A valid fault for this service is logged via the Unified Gateway after an Operator has proven the fault out of their network. The Operator should log the fault against the WUP circuit reference number.

5.2.6 Fault handling process

Please refer to the Process Manual for the fault handling process for this service. The status of a fault can be tracked throughout its lifecycle via the UG web GUI by an Operator. Only those faults relating to an Operator will be visible to them.

Service shall be deemed to have been restored when the fault condition is resolved on the open eir network and service availability is restored. Notification will be provided to open eir via an Operator.

5.3 Ordering a 2nd WUP circuit

An Operator will have an option to implement diversity by ordering a 2nd WUP circuit. open eir can facilitate in planning of the 2nd WUP circuit to minimise any commonality with the primary WUP circuit where possible. **However it's the Operator's responsibility** to switch traffic between the primary and second WUP circuit. The Operator should also validate that both primary and diverse routes are maintained to ensure the level of separation is adequate.

5.4 Billing

There are connection and rental charges associated with the WUP. Once the order is completed and the circuit is commissioned, billing shall commence in the next billing cycle. Billing shall be carried out on a monthly basis in advance and the service shall be identified on the bill.

In the event that an Operator has a query regarding the bill they should contact their Wholesale Customer Relationship Manager.

6. Supporting Documentation

Further information on open eir Wholesale processes and supporting information may be found at www.openeir.ie

- _ 1Gbit/s & 10Gb/s Wholesale Un-contended Inter-Operator Process Manual
- _ 1Gbit/s & 10Gbit/s Wholesale Un-contended Product SLA
- _ 1Gbit/s & 10Gbit/s Wholesale Un-contended Product Description

7. Appendix 1 – Regulatory and Standards Compliance

- IEEE 802.1Q (VLAN), 802.1p (Priority), 802.1ag (CFM), 802.3ah(EFM), 802.1x
- ITU-T Y.1731, G.8010/Y.1306, G.8011.1+2, G.8012, G.8031 (APS)
- MEF-6.1, -9, -10.2, -11, -14, -20, -21, -22.1, -23.1, -25, -26.1, -30, -33, -35
- IETF RFC 2544 (Frame Tests), RFC 2863 (IF-MIB), RFC 2865 (RADIUS), RFC 281
- ANSI C84.1-1989
- ETSI 300 132-2, BTNR2511, ETS 300-019 ETS 300-019-2-[1,2,3], ETS 300-753
- NEBS Level 3 certified
- Telcordia GR-499, GR-63-CORE, SR-332
- Safety IEC/UL/EN 60950, 21CFR1040.10, EN 60825, EN 50371, EN 300-386, EN 50160, IEC 60320/C14
- EMI EN 300-386, GR-1089-CORE, ETS 300-132, FCC Part 15

8. Appendix 2 - Version History

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