Wholesale Ethernet Access

Product Description

Version Control

Version	Status	Update	Effective Date
v5.0	Final	Effective 5/03/10	5th March 2010
V6.0	Final	This document is based on V5.0 Implementation of Standardised Change Control.	26/06/17

This document follows change control procedure:

Proposed is defined as a document status when the approved document is uploaded to Proposals Section of open eir Website.

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For information:

- Historical Document History Table located at end of Document.
- Publish means the action of uploading a document to the website regardless of status or location.
- If there are changes to the document between 'Proposed' and 'Final', change control operates.

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1 Preface

This document defines the eircom Product Description for Wholesale Ethernet Access (WEA).

This document is without prejudice to any future position that may be adopted relative to the provision of WEA. It should be read in conjunction with the associated documents detailing processes, terms and conditions and service level agreements published on eircom's website.

The documents may be updated and modified from time to time. The controlling versions are the latest published version.

2 Service Overview

WEA is a transparent (that is, not circuit switched) transmission capacity connection from an end user premises termination point to an Operator Point of Handover.

The points of demarcation between the two networks will be the Point of Handover (POH) between an eircom exchange and an Operator Point of Presence (POP).

The point of demarcation between eircom and the end user is a termination point located in the end user premises.

This product is available to Authorised Operators only.

3 Product Features

The main features of the product are:

10 Mbit/s Ethernet presentation at access point

Aggregated handoff options

- 100 Mbit/s Ethernet Operator sited delivery
- 100 Mbit/s Ethernet in span delivery
- 100 Mbit/s Ethernet in building delivery
- 100 Mbit/s Ethernet delivery over existing ISH or CSH PPC TLs, (InSpan / Customer Sited
- Handover Partial Private Circuit Transponet Link, over a spare STM-1 within the TL.

WEA Aggregation Links can be ordered either Contended or Uncontended.

WEA Access Circuits provided using SHDSL over 2 or 4 copper pairs.

Access bandwidths available 512kb/s, 1Mb/s, 2Mb/s, 4Mb/s, 8Mb/s and 10Mb/s

Symmetrical service offering same bandwidth in both directions

A single standard class of service

Point to point VLANs from access point to hand off point

A WEA Ethernet Access Circuit can be used for one or more VLANs.

VLAN tagging will be used at the access point and the handoff point

Available nation-wide to any location within NTU range of Martis nodes throughout the country

Access bit rates of 8 Mb/s and 10 Mb/s will only be available from certain eircom exchanges.

Handoff will be available from a limited number of exchanges.

- Contention can be applied on the WEA Offer or the WEA over SDH Offer. (It is not possible to provide an uncontended and contended service in parallel on the same WEA Aggregation link.

In-Building Handover will be provided to Operators at their LLU co-located footprint.

4 Product Components

The WEA product consists of two components:

- WEA Aggregation Link
- WEA Access Circuit

These are detailed in the following sections.

4.1 WEA Aggregation Link

The WEA Aggregation Link may be provided over the following methods with or without contention:

Operator Sited Handover

Operator Sited over PPC CSH TL (SDH) Handover

In Span Handover

In Span over PPC ISH TL (SDH) Handover

In Building Handover

These are detailed in the following sections.

4.1.1 Operator Sited Handover

An Operator Sited WEA Aggregation Link is an eircom provided connection between the eircom network and the Operator network. An WEA Ethernet Switch will be provided for handoff at the Operator POP. A Fast Ethernet port (100 Mbit/s) on the switch will be used for handoff to the Operator.

Contention, where ordered, is applied at the Operator facing port of the eircom sited WEA switch, i.e. a rate limit is applied to this port. This service does not support an uncontended and contended service in parallel on the same WEA Aggregation link.

The available eircom serving exchanges are included at Appendix 1

4.1.2 Operator Sited over PPC CSH TL (SDH) Handover

An Operator Sited WEA Aggregation Link is an eircom provided connection between the eircom network and the Operator network which utilises an existing STM 1 slot within an STM-x Operator sited handoff Transport Link.

A 100 Mbit/s path will be built through the eircom SDH network and through the transport link to the handover point.

Contention, where ordered, is applied at the Operator facing port of the eircom sited WEA switch, i.e. a rate limit is applied to this port. This service does not support an uncontended and contended service in parallel on the same WEA Aggregation link.

The available eircom serving exchanges are detailed in Appendix 1.

4.1.3 In- Span Handover

An In-Span WEA Aggregation Link is utilises Operator provided transmission between the eircom network and the Operator POP where this transmission connects to the eircom network in an underground manhole or street cabinet, and is provided by the Operator near the nominated eircom exchange. It should be located not more than 100 metres from the curtilage of the eircom serving exchange. The closure to be used in either event is the Raychem, FOSC 400 Xcon closure, which is an Optical Distribution Frame (hereafter known as ODF) type closure for 12 fibre to 12 fibre.

eircom will terminate its fibres on one side of the ODF, and the Operator will terminate its fibres on the other side. The fibres will be connected using the Operator provided patch cord. A WEA Ethernet Switch will be provided for handoff in the eircom exchange. A Fast Ethernet port (100 Mbit/s) on the switch will be used for handoff of the aggregated traffic to the Operator.

Contention, where ordered, is applied at the Operator facing port of the eircom site WEA Ethernet switch, i.e. a rate limit is applied to this port. It is not possible to provide an uncontended and contended service in parallel on the same Aggregation link.

The available eircom serving exchanges are detailed in Appendix 1.

4.1.4 In- Span over PPC ISH TL (SDH) Handover

An in Span WEA Aggregation Link over SDH Handoff is an eircom provided connection between the eircom network and the Operator network which utilises the existing or yet to be provided STM-N customer sited handoff (ISH) transport link.

A 100 Mbit/s path will be built through the eircom SDH network and through the transport link to the handover point.

Contention, where ordered is applied by mapping the *n x* VC-12 on the Ethernet over SDH card in increments of 2Mbits on the Aggregation Link over SDH Handoff .It is not possible to provide an uncontended and contended service in parallel on the same WEA Aggregation link.

The available eircom serving exchanges are detailed in Appendix 1.

4.1.5 In- Building Handover (IBH)

An Operator may have In-Building Handoff (IBH) at eircom sites provided they have a current valid Physical Colocation Licence for each Site.

An Operator must have signed a Leased Line Agreement, specifically Service Schedule 013.

Prior to availing of In-Building Handover (IBH) service an Operator must complete any relevant Service Establishment Testing detailed in the Process Manual for Physical Co- location Service and ULMP/LS.

In-Building Handover (IBH) is available to an Operator currently availing of the eircom Physical Co-location Service provided in an eircom exchange which facilitates Local Loop Unbundling in accordance with the Local Loop Unbundling regulations currently in force, published on eircom's website and agreed with the National Regulator.

An Operator must execute a Deed of Variation to the Licence for that site prior to order acceptance.

The eircom physical network termination point for a Wholesale Ethernet Access (WEA) Aggregation Links, In-Building Handover (IBH), is the point on the ODF where the fibre cable to the Operator fibre patch panel is installed at the Operators handover location. (?)

The physical Co-location operational processes that support the interactions between eircom and an Operator for the delivery of serviced accommodation in an eircom exchange are outlined in the "Process Manual for eircom Physical Co-location Service".

For the purpose of providing a WEA Aggregation Link IBH an Operator must request a Physical Change (as defined in the Licence Agreement) as per 5.2.1. of the process manual for eircom Physical Co-location Service. An Operator must follow the Access request process and supply Methods Statements.

An Operator must ensure that a suitable environment is provided, to ensure that adequate space, power, environmental conditions and general facilities are available to allow eircom to deliver a WEA Aggregation Link IBH service. When required, an Operator must enable access to the handover location for eircom to install and support the service.

Where a Site Survey and fibre cabling is undertaken on request of an Operator for IBH, eircom will charge associated labour rates and costs incurred under Service Schedule 101 of the eircom Access Reference Offer. These charges will apply as part of the site preparation and will apply should the WEA be cancelled.

4.1.5.1 IBH Copper Handover

The aggregated handoff may be uncontended or as an option contention will be offered.

For the uncontended in building service the aggregated handoff to the Operator will be via a direct Fast Ethernet link from an Ethernet port on the ESU card.

For the contended in building service the aggregated handoff will be via an eircom owned Ethernet switch. This handoff switch will be connected to an Ethernet port on the ESU card. A Fast Ethernet port on the switch will then be used for handoff to the Operator.

The Aggregation Link handoff will be over a copper cable terminated on an RJ45 socket on the Operator equipment.

Each IBH site can be used for handoff of standard Aggregation Link(s).

The Operator shall extend the Aggregation Link from this point to their own premises with further aggregation or de-aggregation.

The terms and conditions for use of IBH shall be subject to the Licence for each Site. An Operator's Licence for any particular site will require a Deed of Variation at the time of the order.

4.1.5.2 IBH Fibre Handover

The aggregated handoff will be uncontended or as an option contention will be offered.

For the uncontended in building service the aggregated handoff will be via an eircom owned Ethernet switch. This handoff switch will be connected to an Ethernet port on the ESU card. An optical port on the switch will then be used for handoff to the Operator.

For the contended in building service the aggregated handoff will be via an eircom owned Ethernet switch. This handoff switch will be connected to an Ethernet port on the ESU card. An optical port on the switch will then be used for handoff to the Operator.

For both contended and uncontended WEA Aggregation Link IBH, a 12 fibre cable is installed between an Operator footprint and an eircom Optical Distribution Frame (ODF) in the same eircom exchange as the serving eircom Network Node.

The 12 fibre cable from the ODF will in turn be connected, by eircom, to an optical patch panel in an Operator Co-location rack.

The eircom Network Node will be connected to the eircom ODF onto which the Operators 12 fibre cable terminates.

eircom will connect an Operator directly from the Operator patch panel via the eircom ODF to the eircom network. An SFP (LX only) will be installed on the eircom network facing the Operator.

The ownership and responsibility belongs to an Operator to provide the optical patch panel, cable tray, SC connectors, CMS (cable management system) and 12 fibre cabling between the Co-location rack and the eircom ODF.

eircom will present the active WEA IBH Aggregation link to an Operator on a single mode fibre pair with SC connectors.

An Operator is required to allocate 4 positions on the patch panel for each WEA IBH Aggregation link - 2 positions for the fibre pair associated with the active WEA IBH Aggregation link and 2 positions for a spare fibre pair. A spare fibre pair is required for eircom service assurance purposes (i.e. in the event of a fault on the active fibre pair or to test the cable).

The Aggregation Link handoff will be over a fibre cable terminated on a patch panel near the Operator equipment. The Operator shall extend the AggregationLink from this point to their own premises with further aggregation or de- aggregation.

Each IBH site can be used for handoff of standard Aggregation Link(s).

The terms and conditions for use of IBH shall be subject to the Licence for each Site. An Operator's Licence for any particular site will require a Deed of Variation at the time of the order.

4.2 WEA Access Circuit

A WEA Access Circuit is the connection between the end user NTU at the end user premises, via the eircom exchange serving that end user, into and across the eircom network to an Operator nominated WEA Aggregation Link. This connectivity is provided from an end user site to the eircom network at the following bandwidths, 512Kb/s, 1Mb/s, 2Mb/s, 4Mb/s, 6Mb/s, 8Mb/s,10Mb/s.

The service includes a point to point virtual local area network (herein after known as VLAN) which runs from the end user premises through the WEA Aggregation Link to the Operator node.

One or more VLANs may be built on the same WEA Access Circuit. The bandwidth of the WEA Access Circuit is shared between all VLANs built on it. When a WEA Access Circuit is ordered a minimum of one VLAN must also be ordered at the same time.

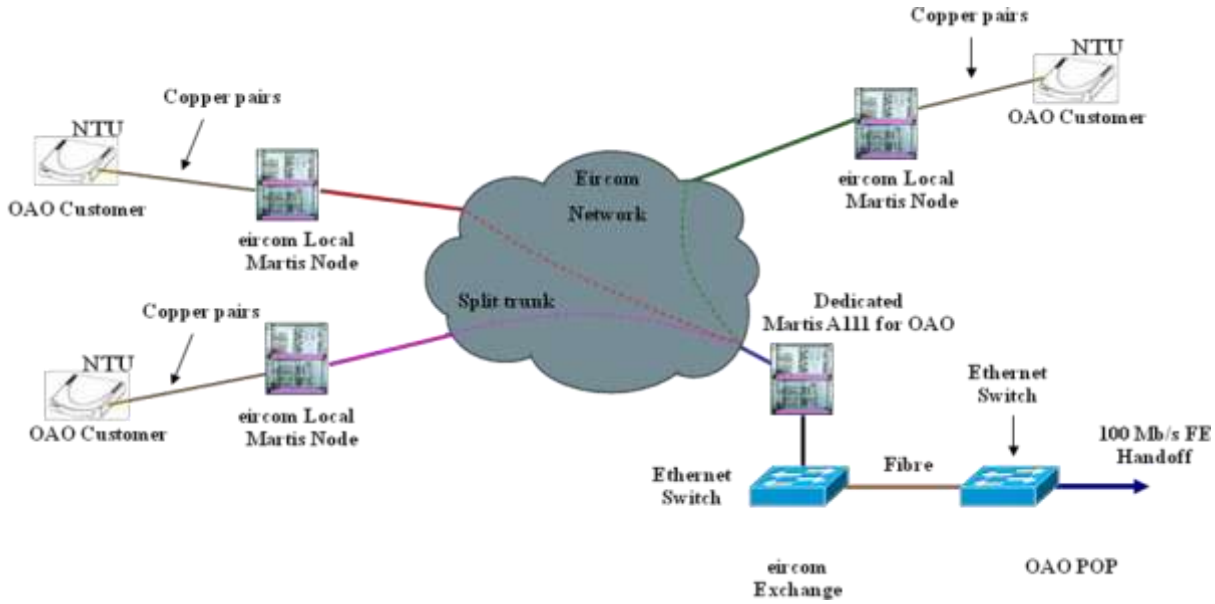
A contended WEA Access Circuit can only associated with a contended WEA Aggregation Link. Similarly for an uncontended WEA Access Circuit can only be associated with an uncontended Aggregation Link.

5 WEA Network Topologies

The WEA network topology is as follows:

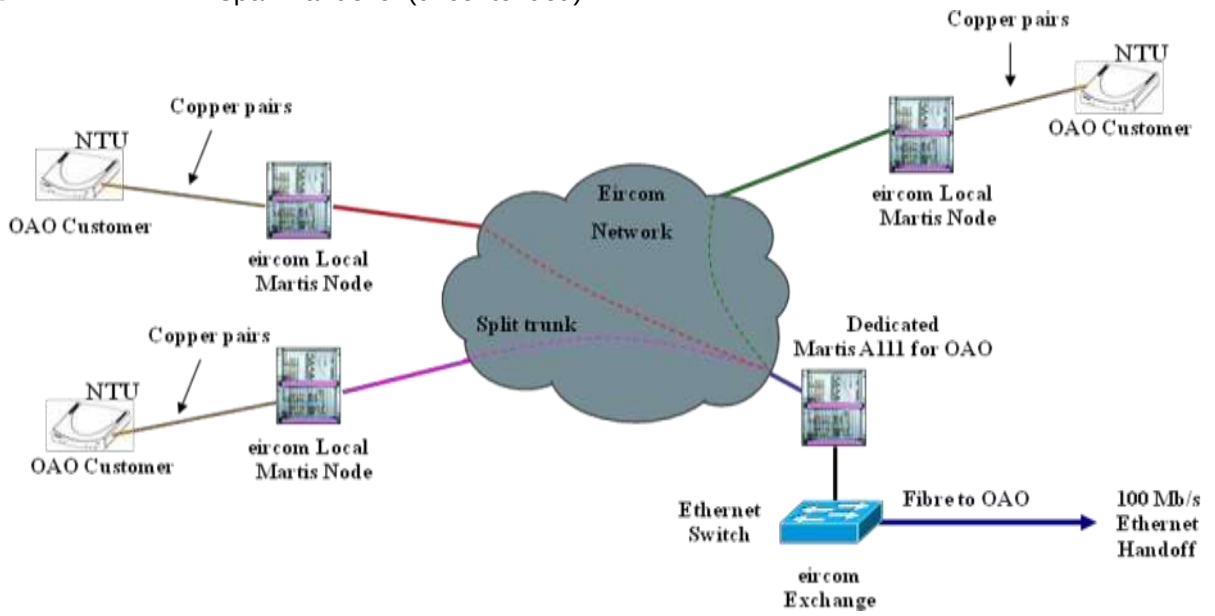
5.1 WEA – Uncontended Handover

5.1.1 WEA – Operator Sited Handover (uncontended)



3.2 **Figure 1: Operator Site handoff (Uncontended)**

5.1.2 WEA – In-Span Handover (uncontended)



4.2 **Figure 2: In Span Handoff (Uncontended)**

5.1.3 WEA – SDH Operator Site Handover (uncontended)

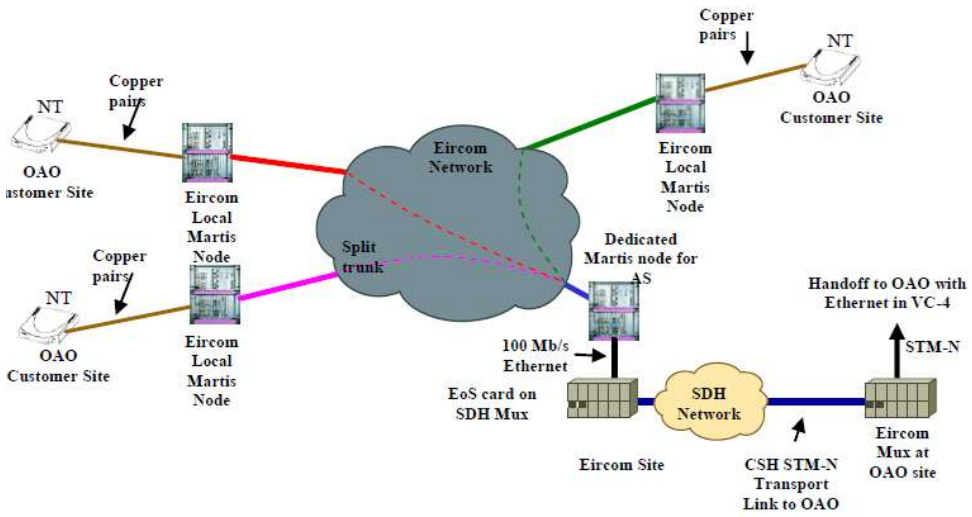


Figure 3: Ethernet over SDH Operator Site Handoff (Uncontended)

5.1.4 WEA – SDH In-Span Handover (uncontended)

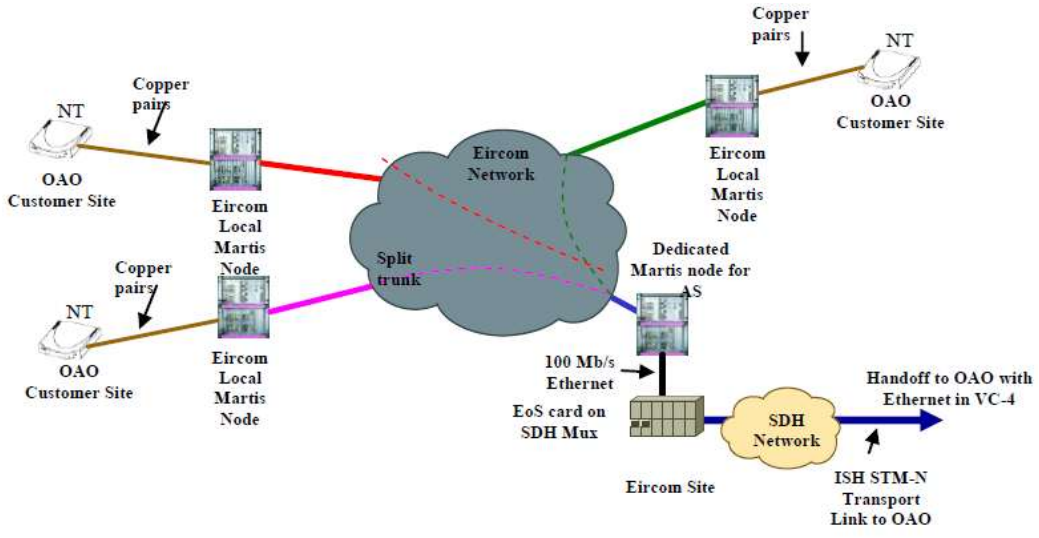


Figure 4: Ethernet over SDH In Span Handoff (Uncontended)

5.1.5 WEA – In-Building Handover (Uncontended)

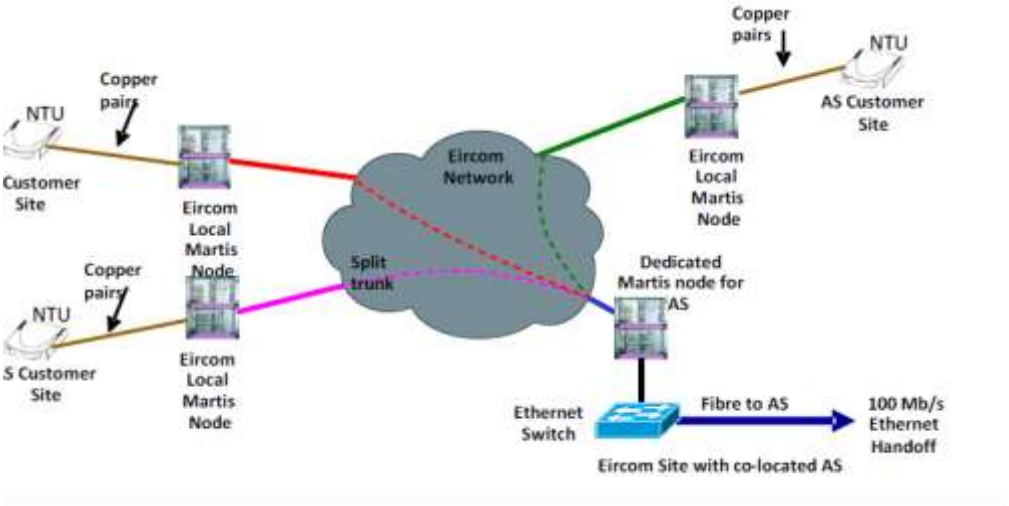


Figure 5: In Building Handover (Uncontended)

5.1.6 WEA – In-Building Handover (Contended)

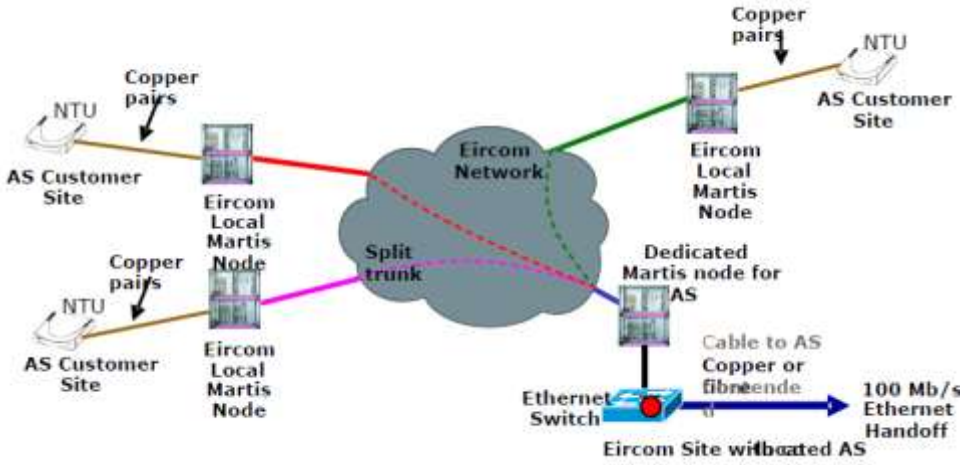


Figure 6: In Building Handover (Contended)

5.2 WEA – Contended Handover

5.2.1 WEA – Operator Site Handover (Contended)

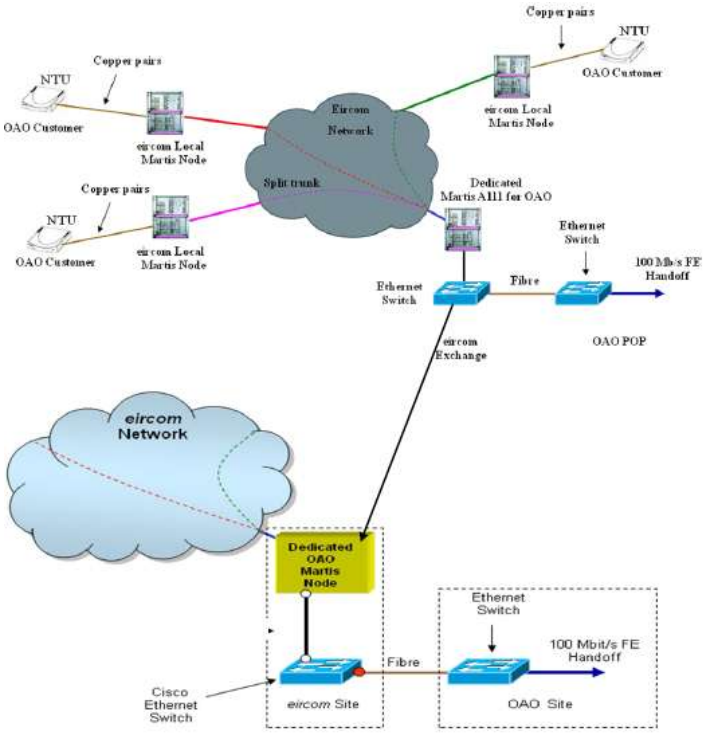


Figure 7: Operator Site handoff (Contended)

5.2.2 WEA – SDH Operator Site Handover (Contended)

Contention is applied by mapping the n x VC-12 on the Ethernet over SDH card in increments of 2Mbits on the Aggregation Link over SDH Handoff .

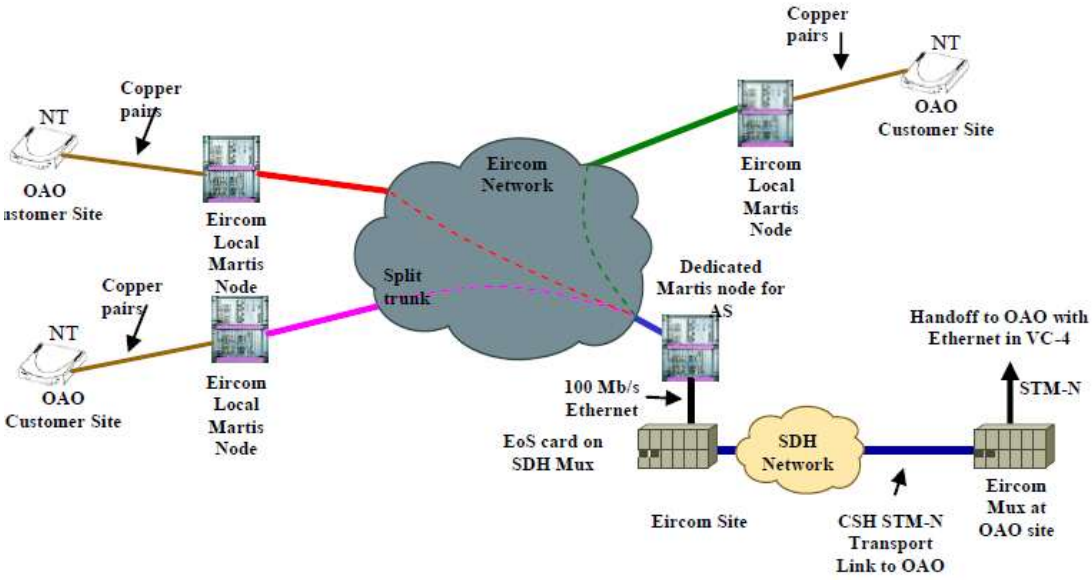


Figure 8: Handoff over SDH (Contended)

6 Product Offering

The Wholesale Ethernet Access Product offering is defined to the parameters listed below.

6.1 Ethernet Aggregation Link

The Ethernet Aggregation Link will be delivered at 100Mb\s.

Aggregated handoff options
100 Mbit/s Ethernet Operator sited delivery
100 Mbit/s Ethernet in span delivery
100 Mbit/s Ethernet delivery over existing PPC Transport Links
100 Mbits/s Ethernet in building delivery

Table 1: Ethernet Aggregation Link options

6.2 Ethernet Access Circuits

The Ethernet Circuits will be delivered as follows:

Access Speed	Maximum Radial Distance from the eircom local exchange (km)	Modem Type/Number of pairs
512Kb/s	3.0	Always CTE-R/2 pairs
1 Mb/s	3.0	Always CTE-R/2 pairs
2Mb/s	3.0	≤2kms: CTE-R/2 pairs ≥2kms: STE-10M/4 pairs
4Mb/s	2.0	≤1.5kms: CTE-R/2 pairs ≥1.5kms: STE-10M/4 pairs
6Mb/s	1.5	Always STE-10M/4 pairs
8Mb/s	1.5	Always STE-10M/4 pairs
10Mb/s	1.5	Always STE-10M/4 pairs

Table 2: Ethernet Circuit delivery options

7 Service Management

7.1 Order Handling and Provisioning

Orders for the Ethernet Aggregation Link and Ethernet Access Circuits will be processed using the Wholesale Ethernet Access order form.

Order forms can be obtained on www.eircomwholesale.ie or from the eircom account manager. The processes for order handling and provisioning are set out in the Order section of the Wholesale

Ethernet Access Inter-Operator Process Manual published on www.eircomwholesale.ie.

7.2 Fault Handling and Repair

The processes for fault handling and repair are set out in the Fault section of the Wholesale Ethernet Access Inter-Operator Process Manual published on www.eircomwholesale.ie.

7.3 Billing

Billing will be quarterly and in advance.

Bills will be available in both a hard copy and in e-bill format.

There are connection and rental charges associated with the Wholesale Aggregation Link. Once the order is completed and the WEA Agg. Link is commissioned billing shall commence in the next billing cycle. Billing shall be carried out on a quarterly basis in advance.

Some charges for WEA IBH Co-location services such as additional power, labour and site surveys will be billed on an Operators LLU bill, monthly, with all services identified on the bill.

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

7.4 Service Levels

The Service Level Agreement for the service delivery and service assurance of the eircom Wholesale Ethernet Access Product on the eircom Wholesale website at www.eircomwholesale.ie.

7.5 Price

Prices are published in the Network Price List on www.eircomwholesale.ie.

7.6 Terms and Conditions

Terms and conditions are published on the eircom website at www.eircomwholesale.ie in the Leased Line Reference Offer.

8 Appendix 1

Exchange	
Beggars Bush	Naas
Castlebar	North Main
Crown Alley	Portlaoise
Blanchardstown	Quaker Road
Dublin Airport	Roslevin
Dundalk	Sandyford
Kilkenny	Shannon Airport
Limerick	Sligo HPO
Letterkenny	Tallaght
Merrion	Tralee
Mervue	Waterford

Table 3: Exchange sites

9 Appendix 2 – Technical Sheet

Outline of Physical Parameters

Port Type: RJ45 Ethernet / Fast Ethernet. Also there is an in span fibre GigE handoff option.

Signalling: 10Base-T (Ethernet), 100Base-TX (FastE) for RJ45. 1000Base-SX or LX for in span fibre handoff option.

Media Type (AutoSensing Enabled): At handoff NNI auto sensing enabled. At customer access no auto sensing – MDI used.

AutoNegotiation: Disabled

Speed/Duplex: Full duplex at 10 or 100 Mbit/s.

Maximum MTU: 1518 Bytes

Outline of Aggregation Link Parameters

LinkLoss Forwarding (LLF): Not Supported

Link Protection: Unprotected

Link Diversity: Not supported

Link Overbooking: No link overbooking

Outline of Ethernet Access Service Parameters

Max. Throughput (incl. GFP overheads) Ethernet – 99.99%: 1518Bytes MTU

Average Latency at 1518Bytes: There are no guaranteed figures.

Average Jitter at 1518Bytes: There are no guaranteed figures.

Transparency: There is MAC learning and L2CP frames are discarded

Management (support OAM functionality as per IEEE802.3ah): EEE802.3ah is not supported

Additional Questions

Is Q on Q VLAN tagging supported; No

What equipment is used for provision of Ethernet Access Aggregation Link: Tellabs 8100

What type of Ethernet access technology is WEA based on: 802.1q EVPL

Is backhaul from one exchange to another i.e. provide a service through the Naas exchange but can Aggregation Link is at Merrion; Yes, you can have an access circuit originating in one exchange and we provide a backhaul to the aggregated handoff which may be in another exchange.

Is testing of equipment required for in-span Aggregation Links: The expectation is that there is no need for special testing for the Ethernet in-span interconnect, once the type of Ethernet SFP to be used is agreed. The in-span Aggregation Link will carry up to 100 Mbit/s full duplex of data. eircom will use an Ethernet SFP which will connect to a pair of single mode fibres. The default SFP is 1000BaseLX.

Additional Information

The Wholesale Ethernet Access service does not examine or interact with customer's CoS markings.

The Wholesale Ethernet Access service only supports a single VLAN from the end-customer site to the Operator hand-off (NNI). It is not possible to order a second VLAN from the same end- customer site to a different NNI.

In the scenario where an OPERATOR has a second NNI (for additional customer access connections) there is no automatic/manual fail-over to the second NNI in the event of a failure occurring on the first NNI.

The Wholesale Ethernet Access service discards customer STP BPDUs.

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