eircom wholesale

Product Proposal:

Product Description Inter Operator Processes SLA

for

Wholesale CES Service (WCS)

Document Control

Revision history

Version	Date	Revised by	Revision details
1.0	25/10/13	eircom	
1.01	13/05/14	eircom	Detail on WSEA and WEIL Configurations
1.1	01/07/14	eircom	Published Document
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Associated documents

Title	Location
Wholesale Symmetrical Ethernet Access Process Manual	www.eircomwholesale.ie
Wholesale Symmetrical Ethernet Access SLA	
Wholesale Ethernet Interconnect Link Product Description	
Wholesale Symmetrical Ethernet Access Product Description	

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Glossary

CES	Circuit Emulation Service
CoS	Class of Service
CSH	Customer Sited Handover
IBH	In-Building Handover
MPLS	Multiprotocol Label Switching (IP packet-switched traffic)
NTU	Network Termination Unit
PM	Process Manual
PoH	Point of Handover
PSW	Pseudo-Wire (2Mb/s)
SAB	Service Access Bandwidth
SLA	Service Level Agreement
S-VLAN	Service - Virtual Local Area Network
TDM	Time-Division Multiplexing (circuit-switched traffic)
UNI	User Network Interface
WCS	Wholesale CES Service
WEIL	Wholesale Ethernet Interconnection Link
WES	Wholesale Ethernet Service
WSEA	Wholesale Symmetrical Ethernet Access Product

1 Product Description

The purpose of this section is to provide a product description of an eircom Wholesale CES Service (WCS) which includes the use of a circuit emulation (CES) device underpinned by Wholesale NGN component products i.e.WSEA/WEIL. Operators can use these services and component products to provide a circuit emulation service for transport of TDM traffic over the eircom NGN network.

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. eircom reserves the right to adapt the technology used to deliver the Wholesale CES Service (WCS).

This document is without prejudice to any future position that may be adopted by eircom in respect of the Wholesale CES Service (WCS). It should be read in conjunction with the relevant associated eircom Wholesale documents for WSEA and WEIL products (where appropriate, reference offer, process manual and SLA).

1.1 Wholesale CES Service (WCS) Overview

WCS is a logical service being offered by eircom Wholesale to support a circuit emulation service for TDM traffic between an Operator's end-user site using WSEA (Wholesale Ethernet Access) and the Operator's WEIL (Wholesale Ethernet Interconnect Link).

WCS provides encapsulation of circuit-switched traffic to packet-switched traffic using a circuit emulation device. A CES device is connected to an available UNI port[1] of an eircom NTU on a WSEA. TDM traffic is encapsulated within an E1 pseudo-wire(s) and carried over the eircom NGN network using a WSEA logical access (WCS) to a circuit emulation device connected to the WEIL, for handover to the Operator.

The logical service used to carry TDM traffic between a WSEA and WEIL is referred to as a WCS, the bandwidth of the WCS[2] will control the capacity for carrying TDM traffic.

Because of the complexity in delivering WCS on the RAP WSEA product, the order management, reporting and WCS configuration will carried out on a project basis and implemented manually.

1.1.1 Key Features and Availability

The WCS product provides Operators with the capability to carry TDM traffic on the eircom NGN network to meet their end user needs.

Key Features:

- Management of circuit emulation device
- Presentation support for E1 and STM-1
- Performance reporting on traffic
- PSW modular bandwidth growth: 16 x E1 to 126 x E1 at WSEA sites

[1] Provided there is enough physical access bandwidth an Operator may select an available UNI port for each additional WSEA logical access, specifying the interface. The total bandwidth of all WSEA logical access cannot exceed the bandwidth of the WSEA physical access.
[2] A number of PSW circuits can be associated with a WCS logical access, each PSW is an E1 +40% for EF traffic, the bandwidth of a WCS is limited to 1Gb/s or the physical available bandwidth of the WSEA whichever is lesser.

- STM-1/E1 conversion possible with additional equipment

Class of Service option (see WSEA product description):

- Circuit based (100% EF)

1.2 Product Components

The Wholesale CES Service (WCS) requires connectivity (both physical and logical) from an Operator's end user premises to the nominated Point of Handover (PoH) which may be CSH, IBH[3] utilising all of the following products.

WEIL (Wholesale Ethernet Interconnect Link)

The fibre infrastructure for handover of traffic to an Operator (PoH).

A dedicated WEIL (and single SAB) is required to terminate CES traffic.

For 1G CSH handoff, two ports are wired to the CES NTU, one port will carry the data traffic (delivered over a WES logical), the other port to carry the management and synchronization traffic. There is no charge for the transmission of the management and synchronization traffic across the NGN Ethernet Network.

For 1G IBH Handoff, eircom will install an NGN Ethernet NTU in an eircom In-building rack to enable two ports to be wired to the CES NTU suituated in the Operators In-Building Rack.

For 10G handoff (service supported on 'No NTU' only), a 10G WEIL is required to terminate CES data traffic (delivered over a WES logical), and the management and synchronization traffic[4]. There is no charge for the transmission of the management and synchronization traffic across the NGN Ethernet Network. For the avoidance of doubt, the CES service is not supported on the 10G interim NTU.

WSEA (Wholesale Symmetrical Ethernet Access)

Consists of two components

- The WSEA physical fibre infrastructure used to provide access to the eircom NGN network from an end-user site.
- A WSEA logical that carries the end-user traffic between an end-user site and the Operator PoH.

For 1G WSEA Access circuits (CSH and IBH) two ports are wired to the CES NTU, one port will carry the data traffic (delivered over a WES logical), the other port to carry the management and synchronization traffic. There is no charge for the transmission management and synchronization traffic across the NGN Ethernet Network.

For the avoidance of doubt, the CES service is only supported on 1G WSEA.

CES NTU

A circuit emulation specific device configured to encapsulate TDM circuit-switched traffic into MPLS packets presented at an WSEA end-user site or WEIL PoH site as E1 or STM-1 TDM traffic. Refer to Appendix 1 for CES Device Specification Overview

WCS (Wholesale Circuit Emulation Service)

[3] Not supported on WEIL CSH 10G delivered on 'Interim' NTU (APT box)

[4] If 1+1 protection is required on 10G WEIL, it is recommended that the 1+1 mode is configured as 'Active-Passive'. Recommendation is based on the fact that, for stability purposes, there should only be one distinct synchronization signal presented at the CES NTU.

The WCS service contains pseudo-wire[5] that carries encapsulated E1 TDM traffic between the end-user site and the Operator PoH.

1.3 Wholesale Circuit Emulation Service

eircom Wholesale provides a Circuit Emulation Service to Operators to transport their TDM traffic over the eircom NGN network. The Wholesale CES Service includes management of a CES device, and provision of logical[6] services including pseudo-wire (PSW). In addition the Operator will be provided with reporting on the performance of the WCS service and CES devices.

The pseudo-wire uses an E1 channel on a WSEA CES device, where the TDM (circuit-switched) traffic is encapsulated and transported across the NGN (packet-switched) core and mapped to a corresponding channel on a CES device associated with a WEIL, where the traffic is reconstituted as TDM traffic for handover to the Operator.

Figure 1: Circuit Emulation Service

A CES device at a WSEA (end user site) and WEIL (core site) supports 1+1 protection for TDM traffic when presenting STM-1 traffic using an optical interface.

1.4 CES Device Configurations

The type and configuration of CES device deployed will be dependant on the total potential capacity (number of E1/STM-1s) and the presentation required by an Operator.

[5] E1 emulation will require 2.6Mb of EF traffic per PSW circuit, across the NGN network, from WSEA site to WEIL site. The WSEA logical will need to be dimensioned to cater for the total bandwidth of PSW between Operator sites
[6] WSEA logical carries each pseudo-wire to a SAB on a nominated WEIL

Service	Bundle Codes	No. E1's Access	Interfaces	Electrical / Optical
WSEA CES (small)	ATN 1	16		Optical & Electrical
WSEA CES (small)	ATN 2	32		Optical & Electrical
WSEA CES (small)	ATN 3	48		Optical & Electrical
WSEA CES (large)	ATN 4	64		Optical & Electrical
WSEA CES (large)	ATN 5	80		Optical & Electrical
WSEA CES (large)	ATN 6	96		Optical & Electrical
WSEA CES (large)	ATN 7	112		Optical & Electrical
WSEA CES (large)	ATN 8	126		Optical & Electrical
WSEA CES (small)	RTN 1o	16	STM1 X 2	Optical
WSEA CES (small)	RTN 2o	32	STM1 X 2	Optical
WSEA CES (small)	RTN 3o	48	STM1 X 2	Optical
WSEA CES (large)	RTN 4o	63	STM1 X 2	Optical
WSEA CES (large)	RTN 5o	80	STM1 X 4	Optical
WSEA CES (large)	RTN 6o	96	STM1 X 4	Optical
WSEA CES (large)	RTN 7o	112	STM1 X 4	Optical
WSEA CES (large)	RTN 8o	126	STM1 X 4	Optical
WSEA CES (small)	RTN 1e	16	STM1 X 2	Electrical
WSEA CES (small)	RTN 2e	32	STM1 X 2	Electrical
WSEA CES (small)	RTN 3e	48	STM1 X 2	Electrical
WSEA CES (large)	RTN 4e	63	STM1 X 2	Electrical
WSEA CES (large)	RTN 5e	80	STM1 X 4	Electrical
WSEA CES (large)	RTN 6e	96	STM1 X 4	Electrical
WSEA CES (large)	RTN 7e	112	STM1 X 4	Electrical
WSEA CES (large)	RTN 8e	126	STM1 X 4	Electrical
WEIL CES	BSC 1		STM1 X 2 & 1G X 2 optical or electrical	
WEIL CES	BSC 2		STM1 X 4 & 1G X 2 optical or electrical	
WEIL CES	BSC 3		STM1 X 6 & 1G X 2 optical or electrical	
WEIL CES	BSC 4		STM1 X 8 & 1G X 2 optical or electrical	
WEIL CES	BSC 5		STM1 X 10 & 1G X 2 optical or electrical	
WEIL CES	BSC 6		STM1 X 12 & 1G X 2 optical or electrical	
WEIL CES	RNC + BSC 1		STM1 X 2 & 10G X 4 & 1G X 2 optical or electrical	
WEIL CES	RNC + BSC 2		STM1 X 4 & 10G X 4 & 1G X 2 optical or electrical	
WEIL CES	RNC + BSC 3		STM1 X 6 & 10G X 4 & 1G X 2 optical or electrical	
WEIL CES	RNC + BSC 4		STM1 X 8 & 10G X 4 & 1G X 2 optical or electrical	
WEIL CES	RNC + BSC 5		STM1 X 10 & 10G X 4 & 1G X 2 optical or electrical	
WEIL CES	RNC + BSC 6		STM1 X 12 & 10G X 4 & 1G X 2 optical or electrical	

Note: The minimum requirement per customer network is a WSEA CES and a WEIL CES

1.4.1 WSEA E1 Presentation

A digital distribution frame (DDF) will be deployed to support traffic from sites with a requirement with an E1 presentation. The following schematic shows the back panel for a sample WSEA CES (small) configuration of a CES device.

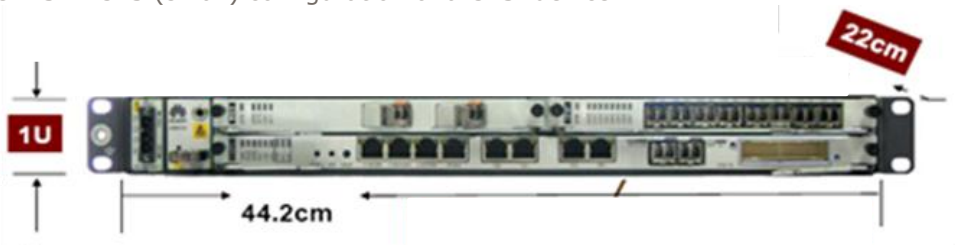

Figure 2: Sample WSEA CES (small) configuration

The following schematic shows the back panel of a sample WSEA CES (large) configuration of a CES device.

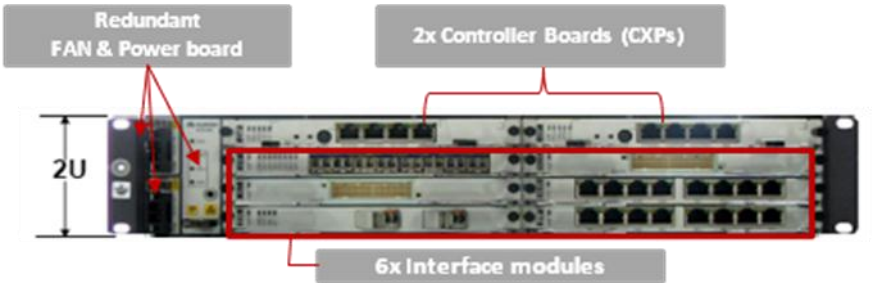

Figure 3: Sample WSEA CES (large) configuration

1.4.2 WSEA STM1 Presentation

An optical distribution frame (ODF) will be deployed on sites where there is a requirement for a STM1 presentation.

A WSEA CES (small) device supports up to 2 x STM-1 pairs (designed to work together in 1+1 MSP protection mode). While the WSEA CES (large) device supports up to 3 x STM-1 pairs (working together in MSP protection mode).

Additional equipment is provided to support an STM-1 presentation at a WSEA end-user site, and used in conjunction with the CES device. This equipment will channelise traffic with an STM-1 presentation into E1s. The STM-1 VC12 channels are wired out to 48 (max) E1 connections on a WSEA CES (small) configuration.

The following schematic shows the back panel of a WSEA CES (small) configuration and inventory of a CES device where the traffic is presented using an STM-1 and has been channelised into multiple E1 links.

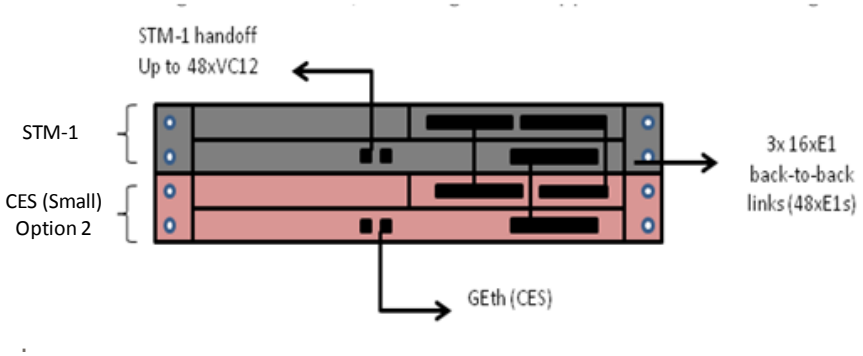

Figure 4: Sample WSEA CES STM-1/E1

Note: Please refer to the WSEA product description for bandwidth options.

1.4.3 WSEA Connection

An Operator, when ordering Wholesale CES Service (WCS) on a CSH/IBH Wholesale Symmetrical Ethernet Access, will be required to specify the Service Access Bandwidth (SAB) on their relevant Wholesale Ethernet Interconnect Link (WEIL) to which an Operator wishes to have TDM traffic mapped.

An Operator must ensure that their relevant Wholesale Ethernet Interconnect Link (WEIL) and associated Service Access Bandwidth (SAB) are appropriately configured to support Wholesale Symmetrical Ethernet Access (WSEA) logical connections.

An Operator has the capability to manage and prioritise its Wholesale Symmetrical Ethernet Access end user's traffic by applying the relevant Class of Service (CoS) to each WSEA logical access provided per UNI port on an eircom NTU. Please refer to the WSEA product description.

1.5 Class of Service

The CES traffic will be carried across a WSEA logical service (WCS) which will be configured with circuit based CoS. The class of service options are outlined in the WSEA product description.

1.6 Commercial

1.6.1 Pricing

Pricing for WCS will be provided within the Leased Line Reference Offer (LLRO) service schedule 17.

1.6.2 Terms and Conditions

Terms and conditions are published on the eircom Wholesale website at www.eircomwholesale.ie. An Operator ordering WCS must already have signed the Leased Line Service Agreement, specifically Service Schedules 13 & 14. In-Building Handover (IBH) is available to an Operator in accordance with the Physical Co-location Service as defined in the eircom Network pricelist, and Service Schedule 14, when provided from an eircom exchange.

1.7 Service Responsibility

1.7.1 eircom Responsibility

eircom has responsibility for the provision, repair and maintenance from the CES device at a WSEA, including logical services across the NGN network to the CES device associated with a WEIL, as defined in the product description for either CSH or IBH.

At the WSEA and WEIL sites, eircom will wire-out and handoff the WCS service on an electrical strip or Optical Fibre Connection (ODF) dependent on the presentation ordered. eircom will supply and install the electrical strip or Optical Fibre Connection (ODF).

1.7.2 Operator Responsibility

For the purpose of providing a Wholesale CES Service (WCS) at a WSEA CSH/IBH site the Operator is responsible for connecting from the CES device to the Operator's own equipment. The interface should be fully compliant to ITU-T G.703 (ES1) signal specification The Operator is responsible for any end-to-end testing of their service. The Operator must ensure that a suitable environment is provided for the CES device and NTU to ensure adequate space, power, environmental conditions and general facilities are available to install the CES device.

In addition the Operator must enable access to its handover location for eircom to install, maintain or cease the NTU[7]. The Operator is responsible for any services that use the Wholesale CES Service (WCS) and Wholesale Symmetrical Ethernet Access Product. The Operator must also review and manage its bandwidth requirements, and request capacity in a timely manner from eircom.

For the purpose of providing a WSEA IBH an Operator must request a Physical Change (as defined in the License Agreement) as per 5.2.1 of the process manual for eircom Physical Co-location Service.

[7] This applies to the Wholesale CES service device if applicapable

2 Inter-operator Process Management (IPM)

There are a number of processes that support this product from the initial forecasting and quotation through to billing as outlined in Figure 5.

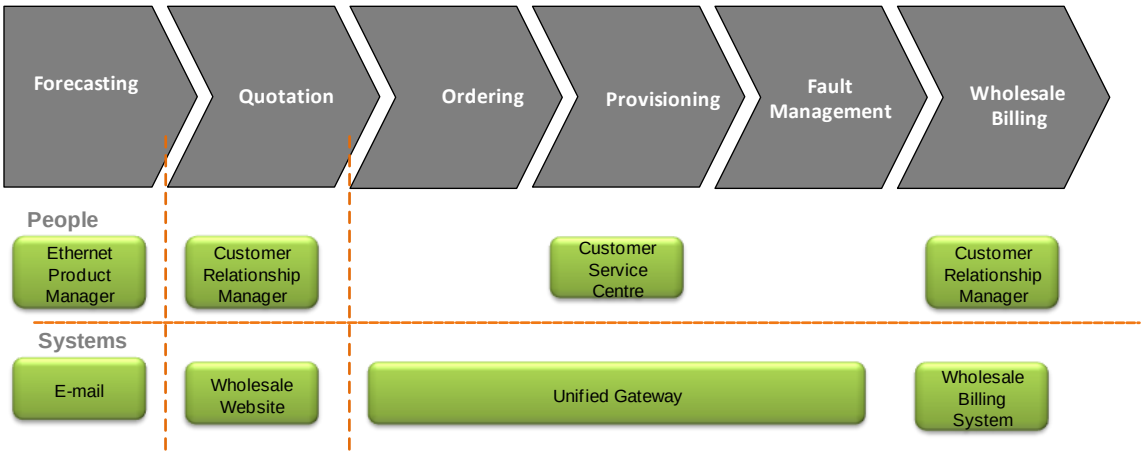

Figure 5: Process, people and systems overview

Prior to requesting the service the Operator may discuss their requirements with their Customer Relationship Manager/Account Manager.

Ordering, and Provisioning process for the circuit emulation service will be manual. Maintenance processes are supported by the eircom Wholesale Customer Contact Centre on the basis of reporting faults using the CES circuit ID, which will be provided to the Operator by eircom Wholesale. After provision of the Wholesale CES Service (WCS) any queries regarding billing should be directed to the Operators Customer Relationship Manager/Account Manager.

2.1 Forecasting

Operators are requested to provide forecasts on a rolling 12 months basis via a standard form with confirmation of these forecasts on a rolling quarterly basis to the Ethernet Product Manager.

Please see section 2 Forecast of the WSEA Process Manual for an explanation of the forecasting process.

2.2 Quotation process

The Operator can request quotes for the service via the Operators Customer Relationship Manager/Account Manager, identifying:

- Nominated handover point (WEIL) location
- Configuration required for CES device at WEIL site.
- Identify the relevant SAB on the nominated WEIL to map TDM traffic
- Nominated handover type - IBH/CSH for WSEA
- Local serving exchange
- WSEA End customer site location and circuit details
- Bandwith required for WSEA logical service
- Number of Pseudo Wire circuits required for TDM traffic at each WSEA site[8]

[8] A number of PSW circuits can be associated with a WSEA logical access, each PSW is an E1 +25% for EF traffic, the bandwidth of a WES is limited to 1Gb/s or the physical available bandwidth of the WSEA whichever is lesser.

- Class of Service for WSEA logical

eircom will provide a quote with an indicative price, subject to full site survey, for the requested services.

2.3 Ordering, Provisioning and Assurance

Ordering, and Provisioning process for the circuit emulation service will be manual. Maintenance processes are supported by the eircom Wholesale Customer Contact Centre on the basis of reporting faults using the CES circuit ID, which will be provided to the Operator by eircom Wholesale. After provision of the Wholesale CES Service (WCS) any queries regarding billing should be directed to the Operators Customer Relationship Manager/Account Manager.

It is the responsibility of an Operator to prove any fault from an Operator network to the point of handover (PoH). If the fibre cable needs to be replaced, it will be funded by the Operator.

2.3.1 Ordering the Service

The Operator can order the Wholesale CES Service via the Operators Customer Relationship Manager/Account Manager, providing: eircom has completed a full site survey and provided a quotation and timeframe to deliver services which the Operator has accepted.

2.3.1.1 Delivery Timelines

WCS has a dependency on stores items and infrastructure, especially Wholesale Symmetrical Ethernet Access orders which are delivered using fibre which is subject to survey and availability. Orders may be classified as standard or non-standard or as a project.

Please refer to section 2 of the WSEA SLA for further details.

2.3.1.2 Confirmation of Delivery

Eircom will deem a WCS order to be complete on provision of a WSEA logical access and associated pseudo-wire', which proves the WCS service between the WSEA CES device and the WEIL CES device is operational.

The Operator will be advised of associated component products as they are completed using WSLAM (SLA) notification by email.

2.3.2 Other orders – change, move, cancel or cease

Following the delivery of the Wholesale CES service (WCS) the Operator can request changes to the service, move the service, for example to another WSEA within the comms room or cease the service.

The changes that can be requested for the WSEA logical service are:

- Change bandwidth of WCS logical service

The following move order can be requested:

- Move Wholesale Symmetrical Ethernet Access – physical

2.3.3 Fault Management

Maintenance processes are supported by the eircom Wholesale Customer Contact Centre (WCCC) on the basis of an Operator reporting fault on the Wholesale CES Service (WCS) using the CES circuit reference number which will be provided to the Operator by eircom Wholesale.

A fault is logged once the Operator has proven the fault out of their network. The Operator should log the fault against the relevant Wholesale CES Service (WCS), CES circuit reference number.

2.3.3.1 Fault handling process

Service shall be deemed to have been restored when the fault condition is resolved on the eircom network and WCS service is restored, notification will be provided by eircom via the Operators Customer Relationship Manager/Account Manager.

2.4 Billing

There are connection and rental charges associated with the WCS service product which cannot commence until the underlying and associated component products are in place. Once an order is completed and the WCS is commissioned billing shall commence. 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/Account Manager.

2.5 Supporting Documentation

Further information on eircom Wholesale processes and supporting information may be found at www.eircomwholesale.ie

- Wholesale Symmetrical Ethernet Access Process Manual
- Wholesale Symmetrical Ethernet Access SLA
- Wholesale Ethernet Interconnect Link Product description

3 WCS Service Level Agreement

3.1 Introduction

This SLA sets out the service level, which eircom offers in regard to the provision of a Wholesale CES Service (WCS) in respect of the existing repair of Wholesale Symmetrical Ethernet Access (WSEA).

These service levels include the provision and assurance of WCS ordered pursuant to a Leased Line Agreement between eircom and the Operator ordering the services. The Wholesale Symmetrical Ethernet Access IPM (Industry Process Manual) is a representation of how the SLA parameters are supported in practice and should be read in conjunction with this document.

3.2 Wholesale CES Service (WCS)

This section sets out the service level which eircom offers with regard to the provision of Wholesale CES Service (WCS). WCS will hereafter comprise the "Services". The individual Services are at all times provided subject to eircom's standard terms and conditions for Wholesale Symmetrical Ethernet Access.

eircom Service Levels will apply for Wholesale CES Service (WCS) delivered to an Operator as per underlying WSEA SLA addressing provisioning, assurance and service availability parameters.

The WCS is a dependent logical component product of the WSEA.

Appendix 1 - CES Device Specification

Properties	CES (small)	CES (large)
Dimension (W×D×H)	442mm×220mm×44.45mm	442mm×220mm×88.9mm
Height (U)	1U	2U
Typical Power consumption	50W	95W
Weight	4.8kg	8.42kg
Interface type	E1 and STM-1/E1	
Temperature	-20°C to +60°C	
Humidity	Long term: 5% RH to 85% RH, non-condensing Short term: 0% RH to 95% RH, non-condensing	