

SERVICE DESCRIPTION 1-1: IN-SPAN INTERCONNECT LINK SERVICE

1 THE SERVICE

The In-Span Interconnect Link Service is used, at the Licensed Operator's request, by the parties to jointly establish the facility for delivery of agreed traffic types between the parties' Networks. The In-span Interconnect Link Service is one option to establish interconnection between a Batelco Switch Connection and a Licensed Operator Switch Connection.

2 DEFINITIONS

Capitalised terms not defined in this Service Description are defined in the Dictionary. Terms defined in this Service Schedule are specific to it.

Batelco In-Span Interconnect Link means that part of the In-Span Interconnect Link between the Batelco Switch Connection and the Footway Box managed and operated by Batelco.

Busy Hour means in a communications system, the sliding 60-minute period during which occurs the maximum total traffic load in a given 24-hour period determined by fitting a horizontal line segment equivalent to one hour under the traffic load curve about the peak load point, provided that:

- (a) if the service time interval used by an Operator's traffic load curve is less than 60 minutes, the busy hour is the 60-minute interval that contains the service timer interval; and
- (b) in cases where more than one busy hour occurs in a 24-hour period, *i.e.*, when saturation occurs, the hour or hours most applicable to the particular situation are used.

Delivery Lead Time means the delivery lead times described in paragraph 4.4.

End to End Bit Error Rate Test means bit error rate tests specified as part of the End to End Multiplexing Tests.

End to End Multiplexing Tests means the standards, testing criteria, testing procedures and acceptance procedures specified in the Joint Working Manual in accordance with which the parties will configure, line up, test and accept In-Span tributaries referred to in the relevant Tributary Assignment Form.

Fibre Acceptance Procedures means the testing standards, testing procedures and acceptance procedures in accordance with which the parties will determine whether each party's fibre run complies with the Optical Fibre Cable Specifications, as set out in the Joint Working Manual.

Footway Box means an enclosure containing the optical fibre cable used for connecting the Batelco Switch Connection and the Licensed Operator Switch Connection, which is owned and maintained by Batelco.

Footway Box Design Specifications means the specifications in accordance with which Batelco must provision, operate and maintain the Footway Box, as set out in the Joint Working Manual.

Footway Box Performance Specifications means the specifications in accordance with which Batelco must maintain the fibres in the Footway Box, including investigation and rectification of faults, as set out in Schedule 6 to the Supply Terms entitled "Fault Management".

Grade of Service means the number of unsuccessful call attempts as a proportion of the total call attempts over either the Batelco In-Span Interconnect Link or the Licensed Operator In-Span Interconnect Link calculated during the Busy Hour over the relevant link, expressed on a percentage basis.

In-Span Interconnect Link means the facility jointly established by the parties for delivery of traffic between their Networks at 2Mbit/s within links carried on optical fibres. The facility is provided by:

- (a) Batelco using an optical fibre run from the Batelco Switch Connection to the Footway Box at an agreed location within the curtilage of the building containing the Licensed Operator Switch Connection;
- (b) the Licensed Operator using an optical fibre run from the building containing the Licensed Operator Switch Connection to the same Footway Box;
- (c) the Licensed Operator to draw that cable into its adjoining building for the purposes of establishing an end to end fibre connection between the buildings containing the parties' respective Switch Connections;
- (d) each party installing its components of the SDH Optical Line System; and

(e) connectivity being provided between the Batelco Switch Connection and the Licensed Operator Switch Connection by means of 2 Mbit/s Interconnect links.

ITU means the International Telecommunication Union.

Licensed Operator In-Span Interconnect Link means that part of the In-Span Interconnect Link that is not comprised of the Batelco In-Span Interconnect Link.

Link Availability Rebate Cap means 20% of the monthly rental Charges for a single Interconnect Link.

Mean Response Time means the average of a party's Response Times in respect of each of Critical Link Failures, Major Link Failures, Critical Route Failures and Major Route Failures only, measured over a quarter (being three (3) consecutive months).

Mean Restoration Time means the average of a party's Restoration Times in respect of each of Critical Link Failures, Major Link Failures, Critical Route Failures or Major Route Failures only, measured over a quarter (being three (3) consecutive months).

Optical Fibre Cable Specifications means the specifications in accordance with which each party must provision its fibre run, as set out in the Joint Working Manual.

Optical Fibre Cable Performance Specifications means the specifications in accordance with which each party must maintain and operate its fibre run, as set out in the Joint Working Manual.

Performance Tests means the performance tests specified as part of the End to End Multiplexing Tests.

Service Credit means, in relation to a single Service Credit, that amount represented by two percent (2%) of the monthly rental Charges for a single Interconnect Link.

SDH Optical Line System means the system jointly established by the parties to provision the STM-1 capacity over the In-Span Interconnect Link, comprising the transmission equipment and other equipment specified in the SDH Optical Line Systems Specifications provisioned by each party at its Switch Connection end of its fibre run.

SDH Optical Line System Specifications means the technical and operational specifications for the SDH Optical Line System, as set out in the Joint Working Manual.

STM-1 Tests means the tests, testing procedures and acceptance procedures specified in the Joint Working Manual in accordance with which the capacity provisioned by means of the SDH Optical Line System will be tested and accepted by the parties.

Target Availability means that amount of time over a quarter, being three (3) consecutive months, during which either the Batelco In-Span Interconnect Link or Licensed Operator In-Span Interconnect Link (as applicable) does not suffer a certain type of link failure or route failure, expressed on a percentage basis.

Threshold Response Time means, in relation to Critical Link Failures, Major Link Failures, Critical Route Failures and Major Route Failures only, the threshold response times set out in paragraph 4.7(b).

Threshold Restoration Time means, in relation to Critical Link Failures, Major Link Failures, Critical Route Failures and Major Route Failures only, the threshold restoration times set out in paragraph 4.7(b).

Total Service Credit Cap means 40% of the monthly rental Charges for a single Interconnect Link.

Tributary Assignment Form means the form, set out in the Joint Working Manual, which each party (the **reporting party**) is to provide the other party setting out the 2Mbit/s tributary allocations which reporting party proposes for the capacity provisioned over the In-Span Interconnect Link.

3 TERMS

3.1 Architecture

- (a) The fibre component of the In-Span Interconnect Link will comprise:
 - (i) one optical fibre run from the Licensed Operator Switch Connection to one half of the Batelco fibre pair from the Batelco Switch Connection ; and
 - (ii) one optical fibre run from the same Licensed Operator Switch Connection to the second half of the same Batelco fibre pair; and

- (iii) a single or combined cable terminating unit installed by each party at the end of each half of its fibre pairs.
- (b) Each party shall:
 - (i) provision its fibre pair in accordance with the Optical Fibre Cable Specifications; and
 - (ii) maintain its fibre pair (including cable terminating units) in accordance with the Optical Fibre Cable Performance Specifications.

3.2 The Footway Box

- (a) Batelco must establish the Footway Box:
 - (i) on the premises of the Licensed Operator, if the Licensed Operator owns the relevant premises;
 - (ii) if the Licensed Operator rents and does not own the relevant premises, on either the Licensed Operator's premises or the property line of the Licensed Operator's premises or any other location as may be reasonable agreed between Batelco and the Licensed Operator, subject to the ability of either party to gain access under applicable property law to the proposed Footway Box location; or
 - (iii) in default of any agreement under sub-clause (ii) above within two (2) weeks of the Service Request, at the property line of the relevant Batelco premises.
- (b) The Licensed Operator must co-operate with Batelco to enable Batelco to establish and maintain the Footway Box in accordance with the Supply Terms.
- (c) Located within the Footway Box shall be:
 - (i) each party's fibre pair installed in ducts leading into the Footway Box; and
 - (ii) the Point of Interconnection, which will be at the Footway Box side of the point where the duct into the Licensed Operator's premises containing the relevant fibre optical cable is jointed to the Footway Box wall.

- (d) Batelco must:
- (i) design, construct and test the Footway Box in accordance with the Footway Box Design Specifications;
 - (ii) leave sufficient optical fibre cable in the Footway Box for the Licensed Operator to draw the optical fibre into its adjacent premises (and the Licensed Operator shall provide an estimate of the required cable length if requested by Batelco); and
 - (iii) maintain the Footway Box in accordance with the Footway Box Performance Specifications.
- (e) As soon as practicable after the Licensed Operator has connected the optical fibre cable to its line terminating equipment, the parties shall jointly conduct testing of each parties' fibre pair and the end-to-end fibre run in accordance with the Fibre Acceptance Procedures.

3.3 SDH Optical Line System

- (a) As soon as practicable after the successful testing of the end-to-end fibre run, each party shall provision, in accordance with the SDH Optical Line System Specifications, its components of the SDH Optical Line System.
- (b) As soon as practicable after the SDH Optical System equipment has been installed and connected, each party shall test the STM-1 capacity at its end in accordance the STM-1 Tests and shall provide the other party with a copy of the results to show that its parts of the SDH Optical Line System comply with the SDH Optical Line Specifications.

3.4 Tributary Testing

- (a) As soon as practicable after the successful completion of the Fibre Acceptance Procedures, each party shall provide the other party with a completed Tributary Allocation Form for the In-Span Interconnect Link.

- (b) As soon as practicable after the successful completion of the STM-1 Tests, the parties shall implement the In-Span tributaries in accordance with the parties' Tributary Assignment Forms and shall then test and accept those In-Span tributaries in accordance with the End to End Multiplexing Tests.

3.5 Costs

- (a) Batelco may recoup half of its costs for work in relation to the Footway Box from the Licensed Operator, on a reasonable time and materials basis.
- (b) Subject to paragraph 3.5(a), each party shall bear its own costs of establishing, operating and maintaining its parts of the In-Span Interconnect Link.

3.6 Charges

The Licensed Operator shall pay Batelco the relevant Charges determined in accordance with Schedule 3 of this Reference Offer.

4 SERVICE LEVELS

4.1 Co-operation

Both parties acknowledge that together they control the In-Span Interconnect Link and the SDH Optical Line System and that they:

- (a) are responsible for managing and operating the components of the In-Span Interconnect Link over which they exercise control;
- (b) will measure and monitor the traffic and quality of Service over the In-Span Interconnect Link in as close to real time as possible; and
- (c) will work jointly to achieve the highest quality Service over the In-Span Interconnect Link in accordance with the general standards and methods specified by the ITU.

4.2 Service Levels

In addition to its obligations of co-operation set out in the preceding paragraph, each party will endeavour to meet the Service Levels applicable to the In-Span Interconnect Link Service

as set out in this paragraph 4. However in the case of Batelco those Service Levels will not apply:

- (a) where the Service has not been properly ordered and provisioned by the Licensed Operator in accordance with the procedures set out in Schedule 5 (Ordering and Provisioning);
- (b) where the Licensed Operator has engaged in unreasonable delay in relation to, or breached any of, its obligations as set out in this Service Description;
- (c) where the Licensed Operator does not co-operate with Batelco as reasonably requested by Batelco in relation to factors affecting quality of Service over the In-Span Interconnect Link; or
- (d) where the Supply Terms provide that they do not.

4.3 Reporting

Each party shall provide traffic and quality of Service reports upon request from the other in relation to:

- (a) in the case of Batelco, the traffic and quality of Service over the Batelco In-Span Interconnect Link; and
- (b) in the case of the Licensed Operator, the traffic and quality of Service over the Licensed Operator In-Span Interconnect Link,

containing at least the information detailing the conduct and results of the following tests defined in the Joint Working Manual:

- (i) End-to-End Bit Error Rate Test (BERT)
- (ii) Performance test

4.4 Delivery and Installation Lead Times for Batelco In-Span Interconnect Links

- (a) The following Delivery Lead Times will apply to the installation of Batelco In-Span Interconnect Links for Orders placed by the Licensed Operator and accepted by Batelco:

Order Type	Delivery Lead Time
New In-Span Interconnect Link (including Footway Box) to a new POI Subject to availability of equipment, infrastructure and readiness of all required work permits.	12 weeks
Additional In-Span Interconnect Link to an existing POI where installation of Footway Box not required Subject to availability of equipment and infrastructure.	4 weeks

- (b) The applicable Service Rebates for a failure to meet the Delivery Lead Times set out in the preceding paragraph are as follows:

Actual provisioning time (Number of weeks after expiration of the applicable Delivery Lead Time)	Rebate per interconnect link
0-1 week	10 Service Credits
1-2 weeks	20 Service Credits
> 2 weeks	30 Service Credits + 30 Service Credits for each further period or part period of 2 weeks delay

4.5 Performance and uptime

Each party will use their best endeavours to meet that Target Availability for the types of failures set out in the table below, and which states the Service Rebate regime that will apply if the relevant Target Availability falls below the stated thresholds:

Calculation	Target Availability	Service Rebate
Target Availability for periods free of Critical Link Failures or Critical Route Failures	99.9%	2 Service Credits per 0.01% or part thereof below the Target Availability but not exceeding the Link Availability Rebate Cap
Target Availability for periods free of Major Link Failures or Major Route Failures	99.5%	2 Service Credits per 0.01% or part thereof below the Target Availability but not exceeding the Link Availability Rebate Cap

4.6 Grade of Service measurements

Each party will monitor the Grade of Service over, in the case of Batelco, the Batelco In-Span Interconnect Link and in the case of the Licensed Operator, the Licensed Operator In-Span Interconnect Link, in order to measure and monitor the overall quality of service over their respective links, including at least measurement by the following parameters:

- (a) total number of call attempts;
- (b) total number of successful calls, including total number of answered calls; and

- (c) total number of unsuccessful call attempts.

4.7 Fault response and repair

- (a) Each party will, as soon as practicable after becoming aware of a Fault with the In-Span Interconnect Link, notify the other party of that Fault in accordance with the procedures for the reporting of faults set out in Schedule 6 (Fault Management) for the reporting of faults, Fault investigation and identification of the Fault Owner and Other Affected Party.
- (b) The parties acknowledge that the applicable Response Times and Restoration Times depend on the nature of the Fault, and that Service Affecting Faults shall be prioritised over Non-Service Affecting Faults. The parties otherwise agree to observe the following Response Times and Restoration Times:
- (i) in the case of Batelco, with respect to a Fault on the Batelco In-Span Interconnect Link; and
- (ii) in the case of the Licensed Operator, with respect to a Fault on the Licensed Operator Interconnect Link:

Fault type (as defined in Schedule 6)	Response Time	Restoration Time	Threshold Response Time	Threshold Restoration Time
	(in hours, as defined in Schedule 6)			
Critical Link Failure	10 minutes	3 hours	15 minutes	5 hours
Major Link Failure	30minutes	5 hours	45 minutes	8 hours
Critical Route Failure	10 minutes	3 hours	15 minutes	5 hours

Major Route Failure	30 minutes	5hours	45 minutes	8 hours
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(c) Where a party's Mean Response Time or Mean Restoration Time exceeds the Threshold Response Times or Threshold Restoration Times respectively for:

- (i) Critical Link Failures;
- (ii) Major Link Failures;
- (iii) Critical Route Failures; or
- (iv) Major Route Failures,

then the following Service Rebates, assessed on a quarterly basis, will apply:

Fault type (as defined in Schedule 6)	Time by which Mean Response Time exceeds Threshold Response Time	Service Rebate	Time by which Mean Restoration Time exceeds Threshold Restoration Time	Service Rebate
Critical Link Failure	15 minutes	4 Service Credits	1 hour	4 Service Credits
	1 hour	5 Service Credits	2 hours	5 Service Credits
	> 1 hour	6 Service Credits	> 2hours	6 Service Credits
Major Link Failure	45 minutes	3 Service Credits	2 hours	4 Service Credits
	2 hours	4 Service Credits	3 hours	5 Service Credits
	>2 hours	5 Service Credits	> 3 hours	6 Service Credits

Critical Route Failure	15 minutes	4 Service Credits	1 hour	4 Service Credits
	1 hour	5 Service Credits	2 hours	5 Service Credits
	>1 hour	6 Service Credits	> 2 hours	6 Service Credits
Major Route Failure	45 minutes	3 Service Credits	2 hours	4 Service Credits
	2 hours	4 Service Credits	3hours	5 Service Credits
	> 2 hours	5 Service Credits	> 3hours	6 Service Credits