

SCHEDULE 6.1 – SERVICE DESCRIPTION

WHOLESALE BITSTREAM SERVICE (WBS)

1. THE SERVICE

- 1.1 The Wholesale Bitstream Service (**WBS**) is a service which enables the Access Seeker to provide high speed products and services to its End Users via Connections over a digital pathway across the Access Provider's Network.
- 1.2 The digital pathway consists of one or more Connections, involving one or more Access Links between the ONT installed at the End User Premises and one or more Aggregation Links.
- 1.3 The WBS Service is available to Access Seekers holding an ISP Class License.

2. DEFINITIONS

Capitalised terms not defined in this Service Description are defined in Schedule 8 - (Dictionary) of the Reference Offer. Terms defined in this Service Description are specific to it.

Access Link means the digital point-to-point communications between an End User Premises and the OLT nearest to that End User Premises.

Aggregation Link means the logical or physical link between an Aggregation Point and an Access Seeker's Point of Presence (POP). An Access Seeker shall have the Access Provider establish at least one Aggregation Link before the implementation of a New Connection Request.

Aggregation Point means the point on the Access Provider's Network where the Aggregation Link is connected.

Access Provider Exchange means an exchange which has OLTs installed at the time of the Service Order.

Connection means the digital pathway that provides one end-to-end connection between one specific End User Premises and the Access Seeker's POP.

End User Premises Equipment means a modem and/or router, or other equivalent technology, necessary to support the End User's ability to use a retail service provided by the Access Seeker over the WBS Service. The End User Premises Equipment is supplied either by the Access Seeker or the End User, as the case may be.

GPON means a gigabit passive optical network, an access technology used by the Access Provider to provide a fibre based Connection at a fixed location.

IP means Internet protocol.

JUMBO frame means an Ethernet frame with a payload greater than the standard MTU of 1,500 bytes.

MTU means a Maximum Transmission Unit.

Network Boundary means, for a fibre based Access Link, the ONT at the End User Premises.

Non-Access Provider Equipment means any End User Premises Equipment which is not supplied, supported, and maintained by the Access Provider.

OLT means optical line terminal, network equipment in the Access Provider Exchange used in the provision of a WBS Connection.

ONT means optical network terminal, network equipment in the End User Premises used in the provision of a WBS Connection. The ONT is supplied, supported and maintained by the Access Provider and the Access Provider reserves the right to change or replace the ONT at any given time.

VLAN means the broadcast domain that is partitioned and isolated in the Access Provider's Network at the data link layer (OSI layer 2).

WBS Operations Manual means Annex 3 of this Schedule 6.1.

3. SERVICE TERMS

- 3.1 The WBS Service shall be made available to any End User on the basis of a Service Order of an Access Seeker. The process for submitting a Service Order to the Access Provider by the Access Seeker is set out in the WBS Operations Manual.
- 3.2 The WBS Service is provided in two separate categories: (i) the WBS Essential; and (ii) WBS Advanced.
- 3.3 The Access Seeker may not resell the WBS Service to another Licensed Operator.
- 3.4 The WBS Service shall enable each Access Seeker to connect a minimum of four (4) VLANs. The Access Seeker may request further VLANs subject to the charges set out in Schedule 3 - (Pricing) of the Reference Offer.
- 3.5 Where an Access Seeker deploys multicasts in the Access Seeker's core Network, the Access Seeker shall be able to use the WBS Service to pass multicast traffic over the Access Provider's Network transparently.
- 3.6 The WBS Service shall support MTU and JUMBO frames. Where required by an Access Seeker, the WBS Service shall support 1,700 byte frames.
- 3.7 If the Access Provider terminates the WBS Service in its entirety, then each WBS Access Link will terminate.
- 3.8 The Access Provider should ensure that all communications with the Access Seeker should be confidential and shall not be disclosed to other Licensed Operators.
- 3.9 The Access Seeker shall be the unique point of contact and shall be solely responsible to its End User for all issues, including but not limited to issues related to the installation of the Access Provider ONT and any ancillary works required for such installation, including but not limited to cabling and civil works, and any relevant Access Seeker equipment on the End User Premises.

4. NETWORK AVAILABILITY

- 4.1 The Access Seeker acknowledges that where GPON fibre is available, the Access Provider will only supply a fibre-based WBS Service in accordance to the process set out in the WBS Operations Manual.
- 4.2 GPON fibre will be considered available where a fibre access cable has been dropped to the fibre distribution point nearest to the End User Premises and that End User Premises can be connected to the Network upon request within the timeframes provided for in Schedule 7 – (Service Levels) of the Reference Offer.
- 4.3 For the purposes of clause 4.2 above, an End User Premises that can be connected to the Network within the timeframes provided for in Schedule 7 – (Service Levels) of the Reference Offer means that the End User Premises is ready to receive the WBS Access Link and that the ONT can be installed at the point chosen by the End User without the requirement of any installation and/or civil works including, but not limited to, additional lead-in piping, conduits, etc.

Provision of the Service

- 4.4 For each Service Order the Access Seeker shall inform the End User that the installation and operation of the WBS Service may require changes to the placement of existing telecommunications devices or changes of equipment.
- 4.5 Data transport using the WBS Service between an OLT and an Access Provider Aggregation Point, or MSAN equipment and an Access Provider Aggregation Point, are available for the range of WBS products identified in Annex 1.

- 4.6 Maximum attainable WBS speed shall be subject to the physical distribution of the bandwidth set out at Annex 1.
- 4.7 The Access Provider shall provide access to an online tool that identifies up-to-date accurate digital coverage maps for the areas in the Kingdom of Bahrain covered by the WBS Service (i.e., block or building) and the Connection type (i.e., copper or fibre) to ensure that the right service is offered by the Access Seeker to the End User. This online tool should be updated at least on a monthly basis.
- 4.8 The Access Provider is responsible to ensure that its Network has the required number of ports and Network elements to fulfill the Access Seekers' requests in accordance with the Service Level Terms in Schedule 7 – (Service Levels) of the Reference Offer.
- 4.9 On the completion of a Service Order, the Access Provider will ensure that the WBS Service is tested in accordance with ITU Y.1564 standard.
- 4.10 The Access Seeker shall in respect of this WBS Service comply in all respects with its obligations under Article 78 of the Law and any regulation or decision issued by the Authority in relation to lawful access.

5. MAINTENANCE AND COMPLIANCE

- 5.1 The Access Provider shall provide Network maintenance and support services in accordance with the processes set out in the WBS Operations Manual.
- 5.2 The provision of a WBS Service or the implementation or transfer of the WBS Service includes the provision of cabling of up to twenty (20) metres for the installation of the ONT. Any distance in excess of 20 metres shall be subject to commercial charges applicable at the time of such request. For the avoidance of doubt, the installation of the fibre does not include any internal works and/or civil works to accommodate such fibre. The Access Provider shall clearly define the demarcation point of its access Network and therefore of the WBS Service.
- 5.3 The Access Seeker shall ensure that Non-Access Provider Equipment supplied by the Access Seeker for the purposes of a WBS Connection:
- (a) meets the specifications and requirements defined by relevant international telecommunications and engineering standards; and
 - (b) is equipment approved under Article 38 of the Law.
- 5.4 The Access Provider shall connect the WBS Service by the relevant RFS Date. The Access Provider shall notify the Access Seeker when the Connection has been completed in accordance with the Service Order procedures set out in the WBS Operations Manual.

6. CHARGES AND BILLING PERIOD

- 6.1 The Access Seeker shall pay to the Access Provider the relevant Charges set out in Schedule 3 - (Pricing) of the Reference Offer.
- 6.2 All Charges and sums due from one party to the other under this Agreement are exclusive of VAT. Any VAT shall be charged in accordance with the relevant regulation in force at the time of making the taxable supply and shall be paid by the paying party following receipt from the billing party of a valid VAT invoice.

7. AGGREGATION LINK(S)

- 7.1 Following a request from the Access Seeker, the Access Provider shall provide Aggregation Link(s) as described in Annex 1 (Aggregation links for WBS services) to this Schedule and at the Charges set out in Schedule 3 - (Pricing) of the Reference Offer.

- 7.2 The first single aggregation link of 10 Gbit/s, the charge for which is already included in the MRC, can be provided for a maximum of one (1) Access Seeker's Points of Presence. In the event that the Access Seeker requests additional aggregation bandwidth, the Access Seeker will be required to procure additional aggregation capacity as set out in Annex 1 (Aggregation links for WBS services) to this Schedule and as priced in Schedule 3 – (Pricing) of the Reference Offer.

ANNEX 1
WBS PRODUCT LIST

WBS Services (fibre) are defined for both (i) WBS Essential and (ii) WBS Advanced as shown in the tables below:

WBS Essential		WBS Advanced	
Download Speed	Upload Speed	Download Speed	Upload Speed
Voice only 1.024 Mbit/s	Voice only 512 Kbit/s	Voice only 2.024 Mbit/s	Voice only 512 Kbit/s
300 Mbit/s	60 Mbit/s	300 Mbit/s	150 Mbit/s
500 Mbit/s	250 Mbit/s	500 Mbit/s	350 Mbit/s
750 Mbit/s	375 Mbit/s	750 Mbit/s	525 Mbit/s
1 Gbit/s	500 Mbit/s	1 Gbit/s	1 Gbit/s
2 Gbit/s	1 Gbit/s	2 Gbit/s	2 Gbit/s

Aggregations links for WBS services

First single Aggregation Link 10 Gbit/s*
Any additional Aggregation Link 10Gbit/s (on request)
Aggregation Link 100Gbit/s (on request)

COPPER-BASED WBS SERVICES

Residential (as per the previous Reference Offer)		Non-Residential (as per the previous Reference Offer)	
Download Speed	Upload	Download Speed	Upload
Up to 20Mbit/s	2.048Mbit/s	Up to 20Mbit/s	2.048Mbit/s

ANNEX 2

WBS SERVICE – TECHNICAL DIAGRAM

GPON Based Network Topology:

