

# Reference Offer for Broadband Services (ROB)

Version 1.1 dated 23/04/2018  
for public consultation

<b>Date</b>	<b>Status</b>
27/03/2015	Version dated 27/03/2015 before public consultation
30/06/2015	Version dated 30/06/2015 for public consultation (30/06/2015 – 30/07/2015)
03/08/2015	Version dated 03/08/2015 for partial public consultation concerning Article 1 (03/08/2015 – 03/09/2015)
23/09/2015	Version 1.0 applicable as from 1/10/2015
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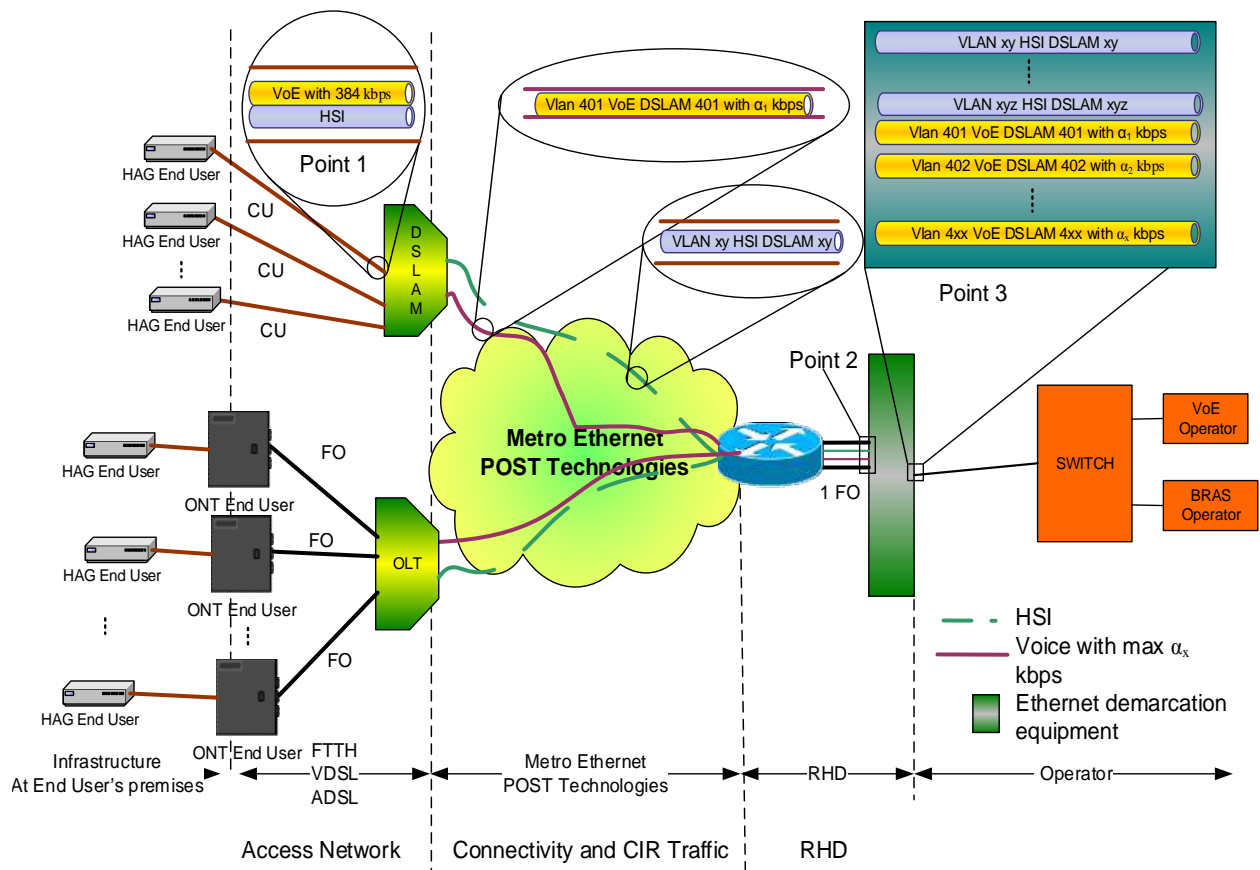


Figure 2: Bitstream Service components in a Multi-VC configuration

As well as providing flexible "Open Access" profiles in a Mono-VC configuration (a single VLAN for all of the Operator's services, e.g. Internet, VoE, etc.) which allow the Operator to purchase and pay only for the traffic and bandwidth actually needed for its own commercial products, this ROB also includes a range of pre-defined bandwidth profiles which are available both in a Mono-VC and Multi-VC configuration (i.e. one VLAN per service).

The following table provides an overview of the available Service Profiles.

Service Profile	Flex 100	Flex 500	Flex 1000	Fix 20	Fix 30	Fix 100	Fix 200
Downstream Maximum bandwidth	100 Mbps	500 Mps	1 Gbps	20 Mbps	30 Mbps	100 Mbps	200 Mbps
Upstream Maximum bandwidth	50 Mbps	250 Mbps	500 Mbps	768 kbps	10 Mbps	50 Mbps	100 Mbps
Eligible infrastructures	VDSL *) GPON **)	GPON	GPON	ADSL *) VDSL *) GPON **)	VDSL *) GPON **)	VDSL *) GPON **)	GPON

Table 2: Bitstream Service Profiles

\*) Availability on ADSL and VDSL infrastructures subject to feasibility check (via online eligibility tool/database as described in Schedule 3).

\*\*\*) In case an activated GPON infrastructure exists at the End User's site, xDSL infrastructures will not be eligible for new Bitstream Services even if a copper infrastructure is still active at this site or in use for existing services.

<b>Service Profile</b>	<b>Flex 100</b>	<b>Fix 20</b>	<b>Fix 30</b>	<b>Fix 100</b>
Downstream Minimum bandwidth	5 Mbps	1 Mbps	7 Mbps	30 Mbps
Upstream Minimum bandwidth	1 Mbps	128 kbps	1 Mbps	2 Mbps

**Table 3:** Minimum bandwidth for the Bitstream Service Profiles on xDSL infrastructures

In case of violation of the Ethernet service parameters defined for each individual Bitstream Service, POST Technologies' Network will perform traffic policing according to the MEF specifications. The Operator has to manage its traffic flows in a way to ensure that the service parameters are not violated.

The following tables summarise the default EIR values for each of the Service Profiles. The parameter "maxDSL\_d" designates the maximum attainable throughput in the downstream direction of the xDSL access line concerned, whereas "maxDSL\_u" designates the maximum attainable throughput in the upstream direction of the xDSL access line concerned.

### **(i) Open Access Service Profiles**

<b>Bitstream Flex 100</b>		
<b>Technology</b>	<b>Downstream</b>	
VDSL	EIR	100 Mbps or maxDSL_d*)
GPON	EIR	100 Mbps
<b>Technology</b>	<b>Upstream</b>	
VDSL	EIR	50 Mbps or maxDSL_u*)
GPON	EIR	50 Mbps

**Table 4:** Bitstream Flex 100 – available on VDSL and GPON infrastructures

\*) EIR will be set to the lowest of the two values

<b>Bitstream Flex 500</b>		
<b>Technology</b>	<b>Downstream</b>	
GPON	EIR	500 Mbps
<b>Technology</b>	<b>Upstream</b>	
GPON	EIR	250 Mbps

**Table 5:** Bitstream Flex 500 – only available on GPON infrastructures

<b>Bitstream Flex 1000</b>		
<b>Technology</b>	<b>Downstream</b>	
GPON	EIR	1000 Mbps
<b>Technology</b>	<b>Upstream</b>	
GPON	EIR	500 Mbps

**Table 6:** Bitstream Flex 1000 – only available on GPON infrastructures

### 2.2.3.1. Mono-VC Configuration

The ROOT\_VLAN between each DSLAM/OLT and the RHD has an EIR capacity of 1 or 10 Gbps depending on the DSLAM/OLT's connectivity to POST Technologies' backbone. EIR capacity will be shared between all connected operators (including POST Technologies).

(i) EIR "Best Effort" traffic

A basic usage is included in the monthly subscription fee of each Bitstream Service in order to cover the average peak hour usage generated by all End Users of an identical Service Profile. These values will be reviewed once per year. The following table gives you the average bandwidth usage included for each of the Bitstream Service Profiles.

Service Profile	Flex 100	Flex 500	Flex 1000	Fix 20	Fix 30	Fix 100	Fix 200
Traffic included	0,7 Mbps	3 Mbps	8 Mbps	0,35 Mbps	1 Mbps	2 Mbps	3 Mbps

Table 13: Bandwidth consumption included with each Bitstream Service Profile

If the total usage of all of the Operator's Bitstream Services exceeds the sum of all the usage already included in the basic subscription fee of the Bitstream Services, the excess traffic measured at RHD level will be invoiced according to Schedule 6. Details of the measurement are given in paragraph 2.2.5.2.

(ii) CIR "guaranteed" traffic

The ROOT\_VLAN is preconfigured with a CIR capacity of 2,4 Mbps and optimised in order to carry voice traffic, as defined in the following table.

Service Parameter	VoE Data	Network Control	VoE Signalling
Priority Bit (802.1p)	7	6	5
CIR	2,10 Mbps	0,15 Mbps	0,15 Mbps
Total voice-related bandwidth in ROOT_VLAN: 2,4 Mbps			

Table 14: Default configuration for CIR traffic in ROOT\_VLAN

Up to 4000 ROOT\_VLAN's can be configured on a single RHD of an Operator.

N.B.: The sum of the CIR capacities of all the Bitstream Services (as specified in paragraph 2.2.2.2) delivered via the same DSLAM/OLT can be greater than the CIR capacity of the ROOT\_VLAN for this DSLAM/OLT.

The Operator may order additional CIR capacity per DSLAM/OLT as specified in paragraph 2.2.4 thereby increasing the guaranteed capacity of the links between the RHD and the DSLAM/OLT.




The Bitstream Service is transparent to all Layer 3 protocols. The maximum MTU size is 1548 bytes.

Layer 2 and Layer 3 QoS markings configured by the Operator will be transmitted between the End User and the DSLAM/OLT in a transparent way without any alterations.

The following table gives an overview about all the authorised modifications for Bitstream services and whether these modifications are free of charge or subject to a one-off fee.

Matrix for Bitstream service profile modifications		New Bitstream service profile after modification													
		Fix 20 ADSL	Fix 20 VDSL	Fix 20 GPON	Fix 30 VDSL	Fix 30 GPON	Fix 100 VDSL	Fix 100 VDSL Bonding	Fix 100 GPON	Fix 200 GPON	Flex 100 VDSL	Flex 100 VDSL Bonding	Flex 100 GPON	Flex 500 GPON	Flex 1000 GPON
Bitstream service profile before modification	Fix ADSL 20	X	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free
	Fix VDSL 20	X	X	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free
	Fix GPON 20	X	X	X	X	Free	X	X	Free	Free	X	X	Free	Free	Free
	Fix VDSL 30	X	Free	Free	X	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free
	Fix GPON 30	X	X	Free	X	X	X	X	Free	Free	X	X	Free	Free	Free
	Fix VDSL 100	X	Free	Free	Free	Free	X	Free	Free	Free	Free	Free	Free	Free	Free
	Fix VDSL Bonding 100	X	Free	Free	Free	Free	X	Free	Free	Free	X	Free	Free	Free	Free
	Fix GPON 100	X	X	Free	X	Free	X	X	Free	Free	X	X	Free	Free	Free
	Fix GPON 200	X	X	Free	X	Free	X	X	Free	X	X	X	Free	Free	Free
	Flex VDSL 100	X	Free	Free	Free	Free	Free	Free	Free	Free	X	Free	Free	Free	Free
	Flex VDSL Bonding 100	X	Free	Free	Free	Free	X	Free	Free	Free	X	X	Free	Free	Free
	Flex GPON 100	X	X	Free	X	Free	X	X	Free	Free	X	X	Free	Free	Free
	Flex 500 GPON	X	X	Free	X	Free	X	X	Free	Free	X	X	Free	X	Free
	Flex 1000 GPON	X	X	Free	X	Free	X	X	Free	Free	X	X	Free	Free	X

Table 31: Authorised change requests

	Not authorised
	Free of charge
	Subject to a one-off fee

Modifications that are subject to a one-off fee will be charged according to the tariffs for installation (with on-site intervention) or activation (without on-site intervention) of the service.

## 6.1.2. Recurring Fees for Bitstream Services

*Minimum contract period for each Bitstream Service: 6 months*

### 6.1.2.1. Access and Connectivity : Recurring Fees for Bitstream Services

Item	Monthly Fee (EUR excl. VAT)	
	Connected to centralised RHD	Connected to local RHD
Bitstream Service Flex 100	29,67	27,11
<b>Bitstream Service Flex 500</b>	<b>39,42</b>	<b>35,30</b>
Bitstream Service Flex 1000	85,78	63,47
Bitstream Service Fix 20	26,86	25,13
Bitstream Service Fix 30	30,13	28,68
Bitstream Service Fix 100	33,23	31,39
Bitstream Service Fix 200	39,42	35,30
Bitstream Service Legacy	14,51 <sup>*)</sup>	n/a

<sup>\*)</sup> Access line and telephony service for POTS or ISDN replication will be invoiced separately to the Operator providing this service to the End User according to the tariffs specified in the RLO (Reference Line Rental Offer)

### 6.1.2.2. CIR Component : Recurring Fees for Bitstream Services

Item	Monthly Fee (EUR excl. VAT)	
	Connected to centralised RHD	Connected to local RHD
CIR traffic Priority Bit 7 (per DSLAM/OLT)	13,17 / Mbps	7,82 / Mbps
CIR traffic Priority Bit 6 (per DSLAM/OLT)	12,44 / Mbps	7,39 / Mbps
CIR traffic Priority Bit 5 (per DSLAM/OLT)	11,71 / Mbps	6,95 / Mbps
CIR traffic Priority Bit 4 (per DSLAM/OLT)	10,98 / Mbps	6,52 / Mbps
CIR traffic Priority Bit 3 (per DSLAM/OLT)	10,24 / Mbps	6,08 / Mbps
CIR traffic Priority Bit 2 (per DSLAM/OLT)	9,51 / Mbps	5,65 / Mbps
CIR traffic Priority Bit 1 (per DSLAM/OLT)	8,78 / Mbps	5,22 / Mbps
CIR traffic Priority Bit 0 (per DSLAM/OLT)	6,59 / Mbps	3,91 / Mbps