

**Tusass A/S  
(Referred to as Tusass)  
Wholesale Data Services**

**Annex C1  
Bit Stream Access ("BSA") Service  
Service Description**

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## 1. Introduction

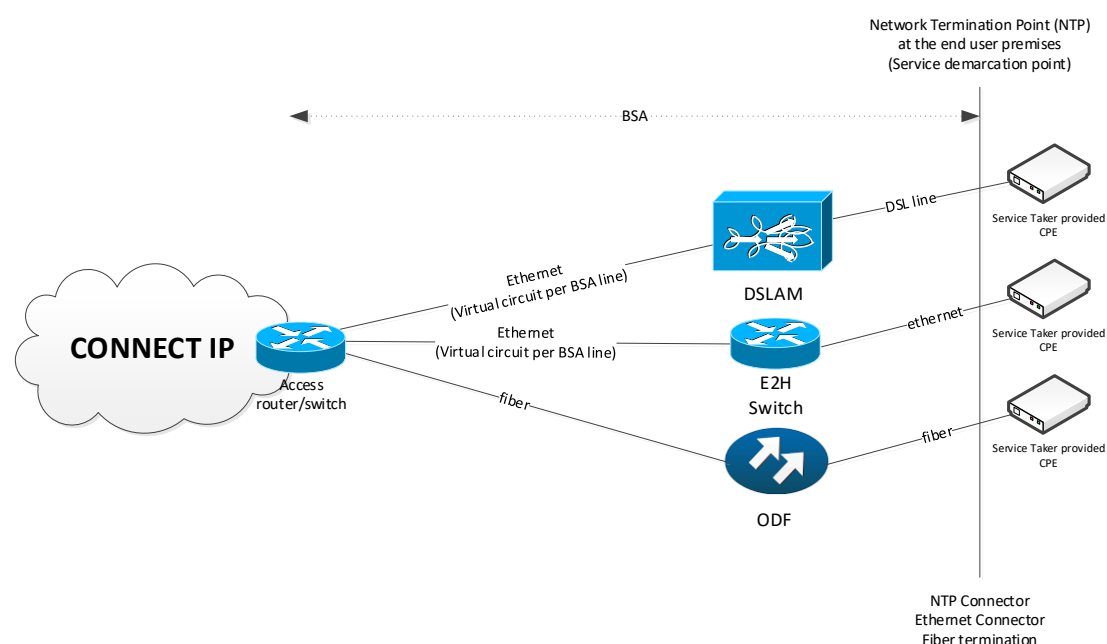
This Annex defines the Bit Stream Access ("BSA") Service.

The processes and technical information to support the implementation of this Service are described in the Operations & Maintenance Manual (Annex E1 of this Agreement) and Technical Description (Annex D1 of this Agreement).

All equipment and plant that is deployed as part of the implementation of this Service shall comply with relevant national and international standards.

All installation procedures used must comply with standard industry practices and national and international standards.

The various Service elements and their relationships are described in more detail in the Technical Description (Annex D1 of this Agreement).



## 2. Service Description

The BSA Service enables a Service Taker to design, create and operate an Ethernet service between the Service Taker's Core Network and its End-Customers. The product(s) and service(s) the Service Taker chooses to provide is not dependant on Tusass equivalent broadband portfolio in other aspects than available line speed.

The BSA Service is an optional part of the complete wholesale portfolio which enables a Service Taker to provide IP based services such as Internet access. The BSA Service does not in itself provide any IP or Internet access services – additional parts of the wholesale portfolio are required.

The BSA Service is delivered via different technologies.

Depending on location and speed required it may be delivered using VDSL, Ethernet or fibre.

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The BSA consists of the following elements in Tusass Network:

In case of VDSL:

- Line plant  
Provides a copper unshielded twisted pair (UTP) connectivity from the Network Termination Point (NTP) at the End-Customer's premises, to a port in a DSLAM.
- DSLAM  
Includes configuration of the relevant port, providing ADSL connectivity towards an End-Customer's premises selected by the Service Taker through manual processes. The DSLAM also includes configuration of a link from the DSLAM towards a Service Taker's Connect IP Service.

In case of ethernet:

- In building Ethernet  
Provides connectivity from the Ethernet to the Home (E2H) switch, typically located within the building to the End-Customer's premises within the building.
- E2H Switch  
Includes configuration of the relevant port, providing Ethernet connectivity towards an End-Customer's premises selected by the Service Taker through manual processes. The E2H Switch also includes configuration of a link from the Switch towards a Service Taker's Connect IP Service.

In case of ethernet:

- Fiber  
Includes configuration of the relevant port in the Tusass core network, providing optical Ethernet connectivity towards an End-Customer's premises selected by the Service Taker through manual processes. The fiber also includes configuration of a link from the Switch towards a Service Taker's Connect IP Service.
- Fiber termination  
Fiber termination is Single mode fiber and Wavelength used is 1310nm.

Tusass will not maintain or make available to Service Taker a CPE whitelist.

Available line speeds for the BSA Service are listed in Annex G of this Agreement. The Service Taker may submit enquiries to Tusass wholesale department to ascertain what line speed can be supported to specific addresses.

The Service Taker must provide the following elements:

- Service Taker must provide its End Customer with a CPE.  
It is the responsibility of the Service Taker to ensure that the CPE is compliant with the Tusass equipment. A Service Taker can request testing and approval of a CPE.
- Service Taker must purchase a Connect IP Service in all cities in which Service Taker wants to offer services using BSA.

- Service Taker must provide a Network Termination Point by purchasing Tusass Local IP Service Tusass to connect into its Core Network to allow Service Taker to perform routing functionality between the individual BSA Service connections and the Service Taker's Core Network

### **3. Geographic Availability**

BSA Service will be made available at all locations where Tusass provides DSL, E2H or Fiber based services. In most settlements, only the 2Mbit/s BSA product is available. Please inquire for details.

### **4. Service Demarcation**

The BSA Service commences at Tusass at a Service demarcation point at End-Customer's premises and terminates in a virtual circuit terminated on a Connect IP Service.

#### In case of VDSL:

- The Service Demarcation is the RJ11 Network Termination point.

#### In case of ethernet:

- The Service Demarcation is the RJ45 Ethernet termination point.

#### In case of fiber:

- The Service Demarcation is the optical termination point.

For Settlements a National IP Service will be required to reach the nearest Connect IP Service.

### **5. Quality Criteria**

The line speed available at provisioning time shall be compliant to that communicated by Tusass wholesale. Should the actual line speed of the Service be less than the speed predicted then the Service Taker will be offered the BSA Service at a lower speed and the corresponding lower price. If the actual speed falls by greater than 20% of the predicted speed, then the Service Taker can register a fault with Tusass. The fault reporting process can be found at Annex E1 of this Agreement.

### **6. Chargeable Service Activities**

The applicable charges for the Service described in this Annex are contained in the Price List Annex contained at Annex G of this Agreement.

The Service Taker will be charged for service activities including:

- Setup charge
  - A one-off charge for the initial provision of the BSA Service.
- Monthly charge
  - A fixed monthly charge for the continued access to the BSA Service.
- Move Address charge
  - A one-off charge when a Service Taker requests a change of End-Customer address for a BSA Service.
- Service change charge

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- A charge per incident of a change in Service such as upgrading or downgrading line speeds.
  - Termination charge
    - A one-off charge for the cessation of the BSA Service.
  - Testing Resulting in "Fault not Found"
    - If a fault is reported by a Service Taker regarding a BSA Service and when that BSA Service is tested by Tusass the BSA Service is found to meet, or exceed, the specifications detailed in Annex E1 of this Agreement, a "Fault Not Found" result would be deemed as the result. In that case, Tusass will charge the Service Taker for the test as indicated under the item "Fault Not Found fee" in Annex G of this Agreement.
    - Where a fault condition continues to exist, Service Taker may request additional testing to seek to establish the cause of the fault. Charges for this additional testing shall be based on the additional work performed as a result of the request. The process for tackling fault reports is described in the Operations & Maintenance Manual in Annex E1 of this Agreement.
  - Cancellation of an order for BSA Service
    - If at any stage in the provisioning process (after receipt of order and before completion of delivery of the BSA Service), Service Taker withdraws its order for the BSA Service, the Service Taker will be charged the full installation charge for the Service originally requested.

## **7. Technical Description**

A technical description of BSA Service is contained in Annex D1 of this Agreement.

## **8. Charging**

The Service Taker will pay Tusass all relevant charges as calculated using the charges specified in, Annex G of this Agreement.

## **9. Billing**

The Billing arrangements for this Service are set out in Annex B of this Agreement.