**SCHEDULE 6.2 - SERVICE DESCRIPTION**

**WHOLESALE** **DATA CONNECTION SERVICE (WDC)**

# THE SERVICE

## The Wholesale Data Connection (**WDC**) Service provides symmetric, synchronous, dedicated and uncontended data connectivity within the Kingdom of Bahrain between:

### two of the Access Seeker’s Points of Presence; or

### an Access Seeker’s Point of Presence and its End User Premises; or

### an Access Seeker’s Point of Presence and the Point of Presence of another Licensed Operator.

(d) Point to Point of an Access Seeker’s End User premises with an additional 50% premium charge on MRC of the requested WDC Bandwidth.

## The WDC Service is provided with a number of options. These are specified in Annex 1 of this Service Description.

## The WDC Service is available to Access Seekers that are Licensed Operators.

## The WDC Service provides the following service characteristics and these parameters are tested as part of the acceptance criteria during the testing validation of a new WDC connection:

### Round Trip Delay (Frame Transfer Delay): 2ms

### Jitter (Frame Delay Variations): 1ms

### Frame Loss Ratio: 0%

# 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.

**Aggregation Link** means the connectivity established between a Point of Presence of the Access Seeker and an Access Provider’s access node, as further detailed in Annex 2 and Annex 3 of this Service Description.

**Connection** means an individual WDC Service as described in paragraph 1.1.

**Customer Premises Equipment or CPE** means the Equipment more particularly specified under Annex 2 (Technical Characteristics) of this Service Description.

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

**Minimum Service Period** means an applicable minimum period of twelve (12) calendar months for which the WDC Service shall be provided, such period commencing from the Service Commencement Date, except for the cases set out in paragraph 2.6 below for Temporary Service Period(s).

**MTU** means a Maximum Transmission Unit.

**Point of Presence** means a permanent physical location where an aggregation link or connection of a relevant Service is terminated at premises owned or leased by the Access Seeker or at the Access Provider’s colocation facility, but for the avoidance of doubt cannot be an earth station, manhole, power room, lead-in pipe, duct, outdoor cabinet, MDF, riser room or anywhere not on the main island of Bahrain unless connected by a permanent physical connection above sea level and accessible the Access Provider.

**Project** means a Service Request comprising of (15) or more WDC circuits with a project plan and delivery schedule as agreed between the Access Seeker and Access Provider.

**Renewed Minimum Service Period** means an applicable minimum period of one (1) calendar month for which the WDC Service shall be provided, such period commencing from the expiry of a Service Period.

**Relocation** means geographically shifting the Service from one permanent physical area to another. For the avoidance of doubt, where the WDC Service is a Connection between the Access Seeker’s Point of Presence and its End User Premises, or when it’s a Connection between the Access Seeker’s Point of Presence and another License Operator’s Point of Presence, the End User/other Licensed Operator does not change.

**Temporary Service Period:** means a period of a minimum of one (1) month and a maximum of three (3) months under which an Access Seeker may request a new WDC Service/Upgrade to an existing WDC Service for the following non-exhaustive list of events: any event, summit, expo, POC in the Kingdom of Bahrain.

**WDC Operations Manual** means Annex 6 to this Schedule 6.2

**Service Period** means the Minimum Service Period or Renewed Minimum Service Period.

**WDC Amended Service** means a WDC Service that is amended by a Change Request.

## **Supply of Service**

## The WDC Service shall be made available to an End-User on the basis of a Service Order submitted by an Access Seeker. The process for submitting a Service Order to the Access Provider by the Access Seeker is set out in Annex 3 (Operations Manual) of this Schedule 6.2.

## The Service Level Terms shall apply to:

### New Connection - provide a new WDC Service as requested by the Access Seeker;

### Upgrade or Downgrade;

### Reconfiguration - reconfigure technical parameters of an existing Connection; and

### Cancellation - the Access Seeker requests the cessation of an existing Connection.

## Where an Access Seeker deploys multicasts in the Access Seeker’s core Network, the Access Seeker shall be able to use the WDC Service to pass multicast traffic over the Access Provider’s Network transparently.

## The WDC Service shall support MTU and JUMBO frames. Where required by an Access Seeker, the WDC Service shall support 1,700-byte frames.

## The Access Seeker and Access Provider shall comply with the Service Order and fulfilment process set out in the WDC Operations Manual.

## The Access Seeker may opt for, and approach, the Access Provider for the provision of WDC Service based on a Temporary Service Period. The Access Provider, upon assessment of the request for a WDC Temporary Service as delineated above, shall be entitled to waive the Minimum Service Period, and any other requirements corresponding to the Minimum Service Period on the Access Seeker for the purposes of this Temporary Service Period. The Parties acknowledge that a Temporary Service Period WDC Service will be charged separately to the charges set out in Schedule 3 (Pricing) of the Reference Offer, and will be based on a time and materials calculation. Where there are multiple requests for different Access Seekers for the same event to be catered under a Temporary Service, the Access Provider will publish its proposal for the aforementioned event, and make such proposal available on a non-discriminatory basis to all Access Seekers. Access Seekers must notify Access Provider of their intention to terminate the Temporary Service Period (i.e. downgrade/terminate the circuit/s, which were Installed/upgraded for this Temporary Service Period) by five working days prior to the end of the Temporary Service Period. Failure to notify BNET will result in a subscription for a further Minimum Service Period under this Schedule on the provisioned Bandwidth and charges.



## Withdrawal of a speed as a result of any amendments to this Service Description approved by the Regulator will not affect the unexpired portion of any Service Period of a WDC Service unless the Access Provider is willing to Upgrade the product for the same Charge.

## The technical specifications of the WDC Service and protection options available for the WDC Service to Access Seekers are set out in Annex 1 and Annex 2 to this Service Description.

## Upon request from an Access Seeker and where other ingress ports are available on the Customer Premises Equipment, the Access Provider shall allow an Access Seeker to ingress its traffic on the other ingress ports of the Customer Premises Equipment (free of charge) provided for a WDC Connection or WDC Aggregation Link.

## The Access Provider shall provide to the Access Seeker a monitoring tool, which shall enable the Access Seeker to monitor the WDC Service against the following minimum parameters and other monitoring parameters in accordance with the technical parameters defined in the Joint Working Manual. This monitoring tool shall provide monitoring facilities 24 hours a day, 7 days a week, 365 days a year. The minimum parameters shall include:

### Link availability;

### Bandwidth Utilisation;

## **Amendment to the WDC Service**

## The Access Seeker and Access Provider shall comply with the specific process set out for the Amendment to the WDC Service in the WDC Operations Manual. This shall cover scenarios whereby the Access Seeker requests an internal shift, Relocation, or an external shift. These processes shall be applicable to existing WDC Services only..

## The Access Seeker shall not be liable for any termination or additional recurring charges in respect of a request for a WDC Amended Service which is for a relocation. The Access Provider shall charge a once off charge in accordance with Schedule 3 - (Pricing) of the Reference Offer for the relocation unless the Access Seeker requires both Connections to be operational in parallel. The Access Provider shall not terminate the Connection which is subject to relocation until the Service Commencement Date of the new Connection.

## **Access Seeker Obligations**

## This Schedule 6.2, and more generally the BNET Reference Offer, does not create any obligation nor any legal relationship between BNET and the Access Seeker’s End-User. This Service Description, and more generally the BNET Reference Offer, does not provide, grant or confer any right, benefit or privilege on any End-User of the Access Seeker.

## The Access Seeker shall provide the Access Provider with suitable space for, and access during Working Hours to, any Access Provider Equipment required to be located in any building in which the WDC Service is located within the control of the Access Seeker. If consent is required from a third party, such as the building owner, the Access Seeker shall procure such consent. The Access Provider is not required to pay the Access Seeker for the preparation or use of, or access to, space provided pursuant to this sub-paragraph.

## Where an End User Premises is a VIP location in the Kingdom of Bahrain which is not subject to the exemption under the Law, the Access Seeker may request use of the Access Provider VIP team (free of any additional charge), if the Access Seeker can provide to the Access Provider a written valid official justification for the need for such services from the Regulator or an equivalent authority. On or before receipt by the Access Provider of the written valid official justification, the Service Request shall be suspended pending receipt of a written confirmation of the approval or if is not received within thirty (30) days of the Service Request, a cancellation.

## If the Access Provider’s Equipment requires electricity supply and electricity connection points, they shall be supplied, in the location specified by the Access Provider, by the Access Seeker at the Access Seeker’s expense according to the equipment specification. Such electricity shall be available at the same level of supply, protection and continuity as that available to the Access Seeker’s or End User’s Equipment, as appropriate.

## The Access Seeker shall be solely responsible for any loss, theft or destruction of, or damage (reasonable wear and tear excepted) to the Access Provider’s Equipment required to be located in the building where the WDC Service is provided and which is within the control of the Access Seeker or End User, occurring any time and howsoever caused (unless caused by the Access Provider or its agents).

## The Access Seeker shall provide the Access Provider and any authorised employee, agent, affiliate or contractor of the Access Provider with all information and assistance that person may reasonably require to design, test, commission and maintain the WDC Service (which may include participation in testing procedures as and when reasonably requested by the Access Provider).

## The Access Seeker may require their agent to be present during the installation, testing or commissioning done by the Access Provider but not so as to affect the Service Commencement Date.

## **Variation or Withdrawal**

## The Access Provider may upon providing three (3) months’ written notice to the Access Seeker and subject to the approval of the Regulator, vary the WDC Service or withdraw the WDC Service relating to the terms and Annexes in this Service Description, by issuing a revised Service Description.

## Notwithstanding paragraph 3.38 above, unless the Access Provider and Access Seeker agree otherwise at the time, any withdrawal or variation of the WDC Service, or any amendment to the Charges payable for the WDC Service in accordance with this Service Description and Schedule 3 – (Pricing) of the Reference Offer, shall also apply to existing WDC Services provided under the Supply Terms, which shall continue in force in accordance with its terms and conditions until renewed or terminated in accordance with this Service Description or the Supply Terms.

## **Maintenance and support**

## The Access Provider shall provide maintenance and support services in respect of the WDC Service in accordance with the Schedule 7 – (Service Levels) of the Reference Offer.

## **Protection**

## The Access Provider shall provide default core level logical protection for the WDC Aggregation Link at no charge.

## The Access Seeker may request an optional level of protection for the access network part of the WDC Connections and WDC Aggregation Links as further detailed in Annex 2 of this Schedule and at Charges set out in Schedule 3 – (Pricing) of the Reference Offer. If the Access Seeker opts for protection of a particular WDC Connection then the Access Provider shall also provide free of charge premium support (Premium Support) services for that Connection, the details of which are set out in the Schedule 7 – (Service Levels) of the Reference Offer.

## Two levels of protection are available in the WDC connections (End user or Access Seeker’s POP), which are the: (i) Silver Protection Level; and (ii) Gold Protection Level as delineated in Annexes 2 and 5 of this Schedule 6.2 and for the additional charges of any of the requested protection level is defined in the Schedule 3. For the avoidance of doubt, availability of the protection shall mean that the feasibility will be required to provision the requested protection level and also the Access Seeker has obtained the premises approval from the landlord and any relevant government authority approvals.

## During the provisioning of a WDC Connection for which protection is required, the Access Provider shall provide the Access Seeker with the technical details regarding the protection solution, including the following:

### the service configuration; and

### the relevant acceptance tests for both the primary and secondary end-to-end WDC Connections at RFS (after provisioning).

## If the Access Seeker has more than one WDC Aggregation Link and requires a WDC Aggregation Link with protection, the Access Seeker should indicate for such WDC Connection:

### the WDC Aggregation Link that will be the primary Aggregation Link;

### the WDC Aggregation Link that will be the secondary Aggregation Link (in stand-by mode); and

### the capacity that should be reserved on the secondary WDC Aggregation Link. This capacity will be guaranteed in case of failure of the primary WDC Connection.

# CHARGES

## The Access Seeker shall pay to the Access Provider the relevant Charges determined in accordance with Schedule 3 – (Pricing) of the Reference Offer.

## 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.

# SERVICE LEVELs

## The Access Provider shall provide the WDC Service in accordance with the Service Levels specified in Schedule 7 – (Service Levels) of the Reference Offer.

## **ANNEX 1**

**CIRCUIT SPEEDS, DEFINED INTERFACES, MEDIA AND TOPOLOGY**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Service element** | **Speed** | **Interface** | **Connector** | **Topology** | **Access** |
| Connection terminating at End-User Premises or Point of Presence | 10 Mbit/s to 1000 Mbit/s | gigabit Ethernet 1000BASE-LX  gigabit Ethernet 1000BASE-SX | SC/LC | Ethernet service point-to-point | Fibre |
|  | 1.25 Gbit/s to 10 Gbit/s | 10GE:10G BASE –SR, 10G BASE LR, 10G BASE –ZR,10GE LAN, 10GE WAN. |  |  |  |
|  | 25 Gbit/s | 25 GE |  |  |  |
|  | 50 Gbits/ | 50 GE |  |  |  |
|  | 100 Gbit/s | 100 GE/OTU4 |  |  |  |
|  |  |  |  |  |  |
| Aggregation Link terminating at the Point of Presence of the Access Seeker | 1 and 10 Gbit/s | gigabit Ethernet 1000BASE-LX  gigabit Ethernet 1000BASE-SX | SC/LC | Ethernet service point-to-point | Fibre |
| Aggregation Link terminating at the Point of Presence of the Access Seeker | 100 Gbit/s | Ethernet | /SC/LC | DWDM/OTN point to | Fibre |

**ANNEX 2**

**TECHNICAL CHARACTERISTICS**

|  |  |  |
| --- | --- | --- |
| **Service Type** | **Service Attribute** | |
|
| **Ethernet service point-to-point or Ethernet service point-to-multipoint (Pseudowire Ethernet tagged mode with port-based aggregation or virtual aggregation) providing guaranteed symmetrical bandwidth** | **Interface** | Optical Access:   1. GE:1000BASE-SX , 1000BASE –LX. 2. 10GE:10G BASE –SR, 10G BASE LR, 10G BASE –ZR,10GE LAN, 10GE WAN. 3. OTU2/OTU2e/OTU4. |
| **Connector** | Fibre Access: SC/Single mode LC |
| **Speed** | Please refer to Annex 1 |
| **Mode** | Duplex |
| **MAC Layer Supported** | Yes |
| **MAC Address Learning** | Yes |
| **Frame Size** | Fibre: Min 1518, Max 9600 (Jumbo Frame), default 1700 |
| **Class of Service** | 100% Real-Time. No Over Utilisation |
| **Maximum Number of CE-VLANs** | 4096 |
| **CE-VLAN – PE-VLAN ID Map** | Multiple VLAN per Connection |
| **CE-VLAN ID Preservation** | Yes |
| **CE-VLAN COS Preservation** | Yes |
| **Unicats Traffic Limit** | None (Copper) / Yes (Fibre) |
| **Multicast Traffic Limit** | None (Copper) / Yes (Fibre) |
| **Broadcast Traffic Limit** | None (Copper) / Yes (Fibre) |
| **Protocol Treatment** | Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSP) |
| Pause (802.3x) |
| Link Aggregation Protocol (LACP) |
| (802.1AG),(802.1Q),(802.1D), (802.1P) |
| Marker Protocol |
| All LAN Bridge Management Group Block of Protocols |
| Generic Attribute Registration Protocol (GARP) Block of Protocol |
| Cisco Delivery Protocol (CDP) |
| Cisco VLAN Trunking Protocol (VTP) |
| OAM CM/Y1731 PDUs |
|  | **Quality of Service** | Round Trip Delay (Frame Transfer Delay): 2ms  Jitter (Frame Delay Variations): 1 ms  Frame Loss Ratio: 0% |

### Information relating to existing CPEs used for the provision of the WDC Service:

Vendor: Huawei (Default CPE)

The Access Provider, as a default, shall offer Huawei CPE’s for the provision of the WDC Service. The Access Provider shallinclude multiple CPE options, to include CPE options which are available from alternative vendors. The Access Provider must apply the same Service Levels, and reserves the right to vary the CPE from time to time.

### Optional Levels of Protection available for the WDC Service:

The Access Provider provides below a summary of the various levels of protection available for the WDC Service:

The Access Provider may also consider a request from an Access Seeker for a full end-to-end physical path redundancy that requires delivery of a secondary Connection/Aggregation Link in a different lead-in duct to the building, where this is reasonable. In such cases, the applicable NRC shall be determined in accordance with the provisions set out in the WDC Operations Manual.

**1. Silver protection**

This protection type, provides the redundant WDC service level at Access connection or Aggregation connection over the same access service access resource cable but two separate service access resource pairs between BNET exchange to End User or Access Seeker’s POP

1.1 Same Access CPE

1.2 Same Access BNET Exchange

1.3 Same Access BNET Node

1.4 Same Client card at Access BNET Node with two interfaces

**2. Gold protection**

This protection type, provides the redundant WDC service level at Access connection or Aggregation connection over the two separate access service access resource cable between BNET exchange to End User or Access Seeker’s POP.

2.1 Same Access CPE

2.2 Same Access BNET Exchange

2.3 Same Access BNET Node

2.4 Separate Client cards at Access BNET Node with two separate interfaces

**\*Access Seeker may request any of the above protection level at Access Seeker’s End User Premise or Access Seeker’s POP (Aggregation) and both protections are considered as separate requests.**

**Annex 3**

**AGGREGATION LINK TECHNICAL SPECIFICATIONS**

**Where the WDC Service is provided using the Access Provider’s Fibre Based Network:**

The WDC Aggregation Link(s) is/are:

### provided for a minimum bandwidth of 10 Gbit/s;

### delivered over a fully redundant fibre path based on available protection levels specified in Annex 2 of this Schedule 6.2, and in accordance with the defined Charges/premiums in line with Schedule 3 (Pricing); and

### provided with protection mechanisms, including MSP 1+1, Sub-Network Connection Protection (SNCP), and Silver auto switching of 50ms.

The regulated MRC applicable to the WDC Aggregation Link is determined in accordance with Schedule 3 – (Pricing) of the Reference Offer.

**ANNEX 4**

**PROVISIONING VALIDATION TEST**

The following provisioning validation test will only be carried out for the WDC Service where the WDC traffic handed over by the Access Seeker to the Access Provider is Ethernet traffic:

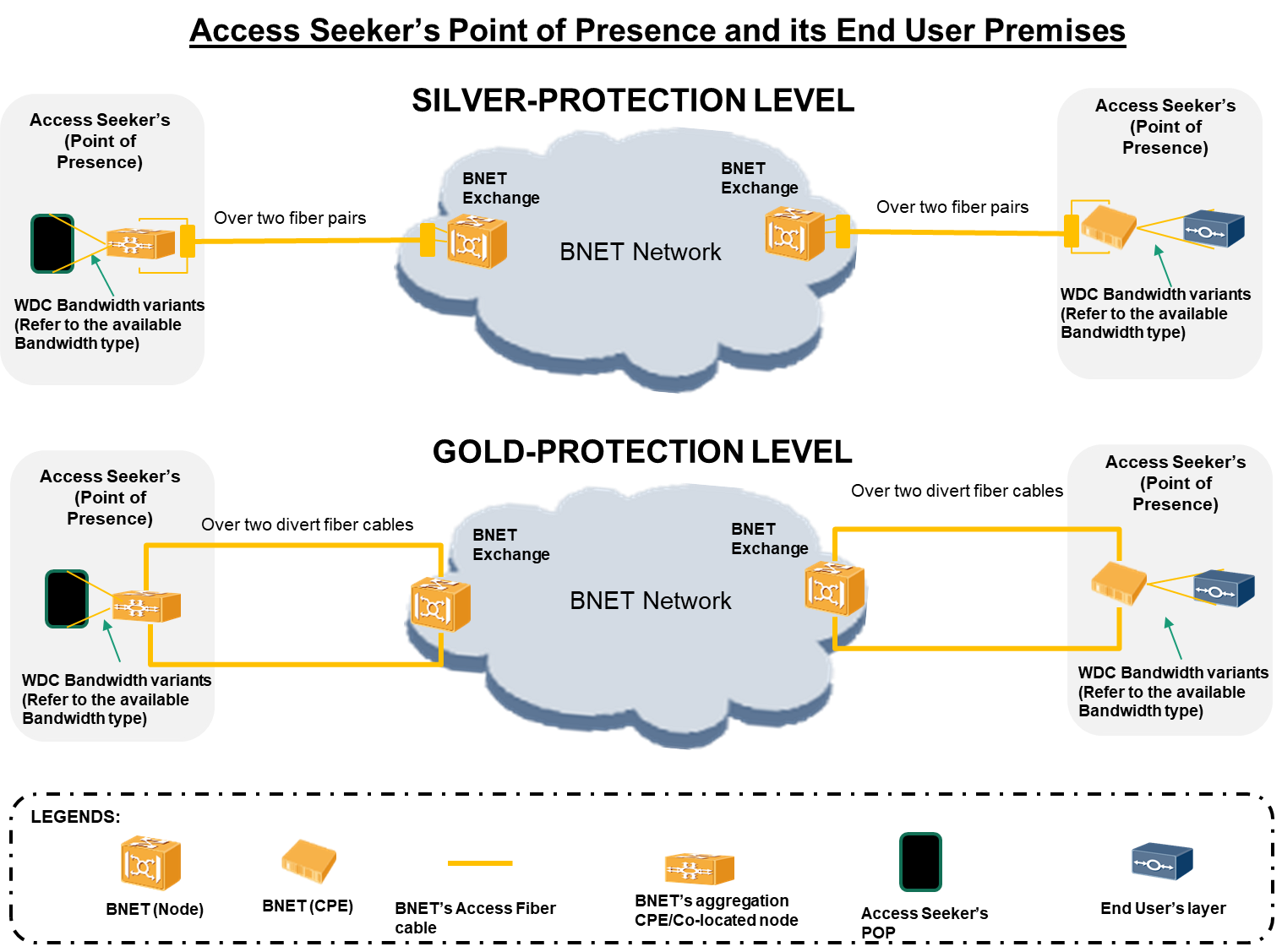
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| --- | --- |
| **Provisioning Validation Test** | |
|
| **Testing Methodology** | ITU-T Y.1564 |
| **Testing Mode** | Layer 1-2 Loopback test.  Tester simulates CPE |
| **Parameters tested** | Throughput, Frame loss, Latency & Jitter |
| **Tester Speed Setting** | WDC Service Speed |
| **Tester Frame Size** | Configuration & Performance Test Frame Size = 9600 |
| **Acceptance criteria** | Link verification using the ITU-T Y.1564 methodology Minimum test time is 15 minutes. |
| **Test Results** | Copy provided to the Access Seeker upon request at time of testing |

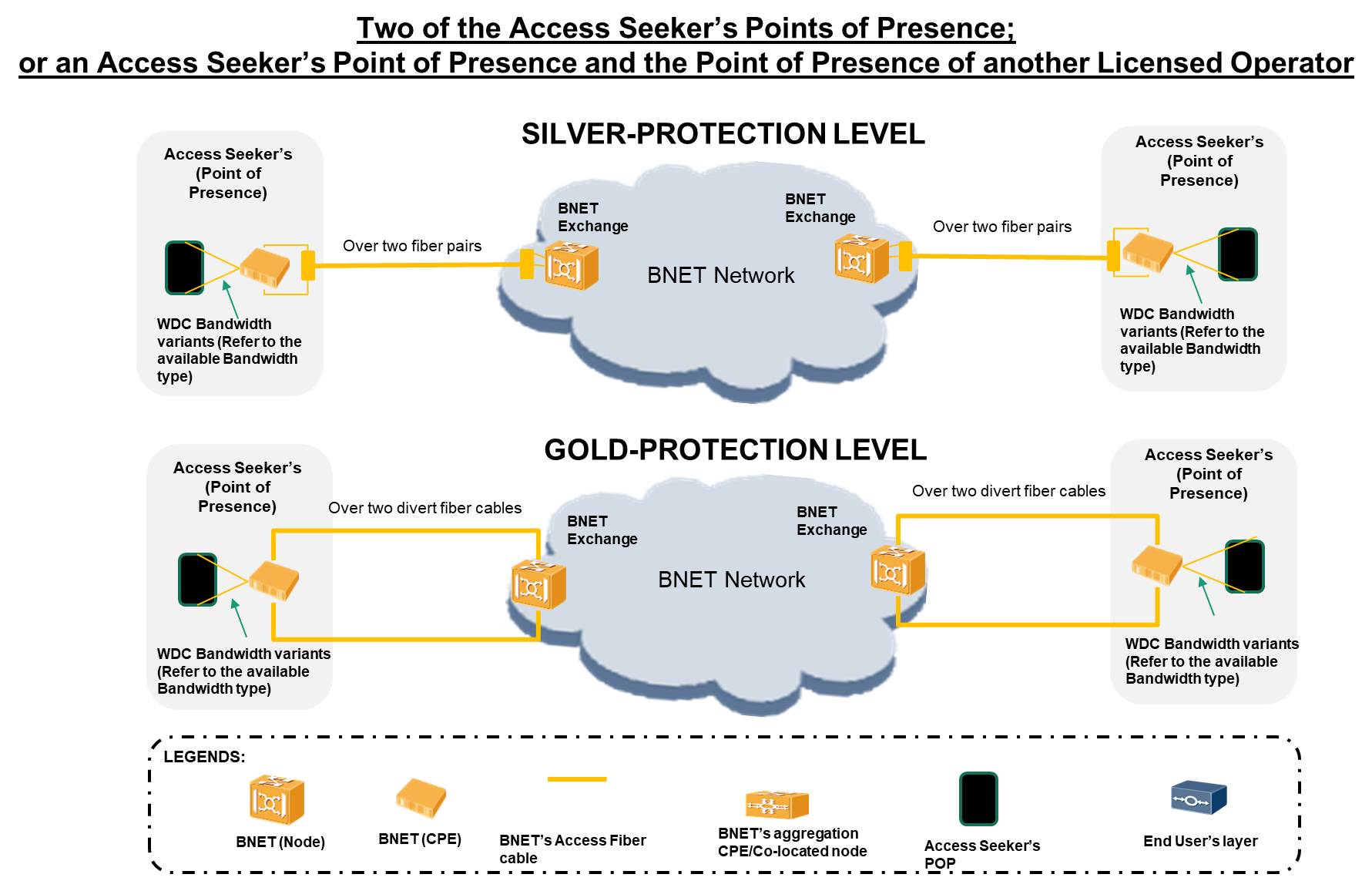
**ANNEX 5**

**WDC SERVICE DIAGRAM AND IMPLEMENTATION INFORMATION**

Diagram

Description automatically generated

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