# **VULA**

Regulated Product And Commercial Offering

20/01/2025





# Summary

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### 1. VULA - regulated product and commercial offering

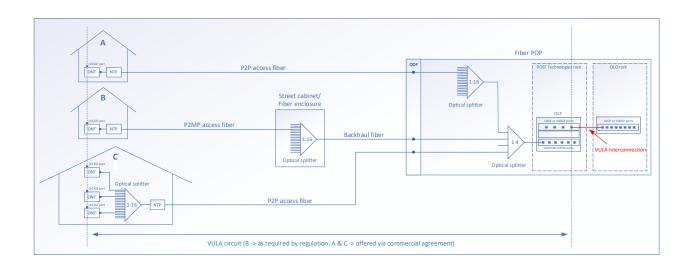
VULA (Virtual Unbundled Local Access) services are described in chapter 2.6 of the Reference Unbundling Offer (RUO). They were defined as a substitution product to be used in case physical unbundling of the local FTTH P2MP (Point-to-Multipoint) loop is technically not possible. Therefore VULA has not been offered on P2P (Point-to-Point) fibers which are available for physical unbundling within the colocation rooms of the local fiber POPs.

Starting April 1, 2025, POST Technologies will extend its VULA offer to the P2P part of its fiber network, which will still be available for physical unbundling. The eligibility criteria for physical unbundling of the P2P FTTH network will remain unchanged. When P2P fiber paths are available, operators can choose between ordering the physical unbundling product or opting for the VULA product. The VULA product will not replace physical unbundling in POST Technologies' P2P fiber network; it will simply be an additional option for operators.

From April on, new eligibility rules for VULA will be implemented in our systems so that VULA will be available in the entire fiber network of POST Technologies, regardless of its topology. Eligibility for VULA will effectively be the same as for Bitstream while eligibility for physical fiber unbundling will remain unchanged.

As with all unbundled local access products, the Operator must have signed the Unbundling and the Colocation Agreements and be present in the colocation of the local POP the access fiber terminates in. VULA is an active L2 service and all local VULA circuits will be delivered to the Operator via an Ethernet interconnection (either on 10GE or 100GE ports) which connects the Operator's network to POST Technologies' OLT (Optical Line Terminal) which aggregates all the PON circuits of the local network. Therefore one such VULA Interconnection is required for each OLT at the local POP.

Before ordering VULA circuits, the Operator must order and activate VULA Interconnections at the fiber POPs of his choice. Pricing for VULA Interconnections and VULA circuits for the "commercial extension" of the VULA offer is identical to the regulated prices specified in the RUO. The same VULA Interconnection can be used for all the VULA circuits terminating on the same OLT - both the "regulated" and the "commercial" ones. There is no need to purchase an additional VULA Interconnection if an Operator has already an interconnection for the regulated VULA circuits in place today at a local fiber POP unless additional capacity is needed.



As this extended VULA offer is currently not covered by the regulation in place, we have preferred not to make any related changes in the reference offer at this stage. As the regulator's ongoing market analysis for the *Wholesale local access provided at a fixed location* is expected to lead to a new regulation over the course of this year, the extended scope of the VULA offer will be considered for the next version of the reference offer and adapted, if needed, to comply with that regulation.

#### **Available VULA profiles** (for additional details and specifications please refer to RUO v2.4.0)

Service Profile	VULA100	VULA200	VULA300	VULA400	VULA500	VULA600	VULA700
Downstream (Mbps)	100	200	300	400	500	600	700
Upstream (Mbps)	50	100	150	200	250	300	350

Service Profile	VULA800	VULA900	VULA1000	VULA2000	VULA5000	VULA10000
Downstream (Mbps)	800	900	1000	2000	5000	10000 *)
Upstream (Mbps)	400	450	500	700	1000	1500

<sup>\*) 10</sup> Gbps on the optical layer including FEC overhead (Forward Error Correction), 8,5 Gbps available at L2 level

All VULA profiles are offered at the same price. To manage capacity efficiently, the Operator should order the profile closest to the one purchased by his end user. VULA profile modifications (bandwidth upgrades and downgrades) are provided free of charge.

## 2. Extended VULA Eligibility

For VULA eligibility, you can either use the eligibility API for real-time checks or the files which are generated on a daily basis.

Example: The NE addressvula.csv file shows the following information:

AddressID	NTP	MDF	GPON	XGSPON
00000069437#000000000000	TCS-FO228588	FO-VH55	YS	YS

For address 000000069437#000000000000 (59, rue Sydney Thomas L-4332 Esch-sur-Alzette) you already get a positive result today as it belongs to the P2MP network. The YS flag indicates that VULA is available and can be installed using the self-activation/one-technician method. The preferred NTP for VULA at this address is TCS-FO228588 which is connected to MDF (ODF) FO-VH55. The main distribution frame FO-VH55 is installed at CT55 in Esch-Wobrecken and all Bitstream and VULA circuits that go through that distribution frame arrive at OLT *OFX155-1*. A VULA Interconnection must be set up on OLT OFX155-1 to receive VULA circuits via ODF FO-VH55.

The MDF field in the NE\_addressvula.csv file allows Operators to determine the POP where they have to set up a colocation and order a VULA Interconnection to get access to all local VULA circuits.

In POST CTs which have more than one main optical distribution frame, there will be more than one MDF which must be mapped to a specific OLT or POP colocation. For example, in CT55 in Esch-Wobrecken which hosts both the FO-VH55 ODF and the FO-POP155 ODF, NTPs connected to any of these two ODFs can deliver VULA circuits via the VULA Interconnection set up on OFX155-1.

The table on the next page shows which ODFs need to be considered for each VULA interconnection. You will find the following information :

#### OLT Name

The name of the OLT. The name also includes the reference of the CT or POP it is installed in, e.g. OFX58-1 is installed in CT58 in Differdange, OFX1229-1 is installed in POP 1229 in Mamer.

#### Stag

The S-Tag used in POST Technologies' network and which identifies the OLT. Added here for additional reference, although not required for VULA connections/circuits.

#### ODF1

Name of an ODF (e.g. FO-POP231) which is connected to a specific OLT (e.g. OFX231-1)

#### ODF2

Name of an additional ODF (e.g. FO-VH31) which is connected to a specific OLT (e.g. OFX231-1)

#### ODF3

Name of an additional ODF (e.g. FO-VH31) which is connected to a specific OLT (e.g. OFX231-1)

Example for VULA Interconnection related to three ODFs: In the specific case of OFX231-1 which is used in the example above, the OLT is installed in POP231 in Strassen. Both FO-POP231 and FO-VH231 are installed in that POP and fibers from those ODFs will be connected to OFX231-1. POP231 is a POP which is installed next to CT31 which will be decommissioned after finalization of the copper phase-out project. ODF FO-VH31 is installed in CT31, but all its fibers are extended to the nearby POP231 and connected to its OLT OFX231-1. Therefore VULA circuits on access fibers terminating on all three ODFs will be delivered on VULA Interconnections set up with OFX231-1.

#### VULA Interconnection delivered to

VULA Interconnections on the specified OLT will be delivered at the POP and/or CT mentioned in this field. Example: OFX60-1 is installed in CT60 in Remerschen. CT60 will be decommissioned after copper phase-out and no Operator is currently present in CT60. Therefore VULA Interconnections will be extended and delivered to the nearby FTTH POP1239 in Remerschen where colocation space is available.

There are some CTs/POPs with particularities:

- There are 2 OLTs in CT43 (Lux-Kirchberg), CT44 (Lux-Belair), CT48 (Lux-Gare), CT61 (Rédange-sur-Mess) and CT67 (Filsdorf). Therefore Operators need to set up two separate

VULA interconnections in these CTs to connect to both OLTs in these CT/POPs, but only one of these interconnections will be billed to the Operator, the second one will be provided free of charge.

- A few of the CTs, which will be decommissioned after copper phase-out, already have a designated POP counterpart (POPs with a "2xx" type name, e.g. CT37 and POP237, CT76 and POP276). In some of these CTs the OLT has already been decommissioned and the circuits transferred to the OLT of the corresponding POP. In some of these "CT-POP couples" 2 OLTs are still active, but circuits might be aggregated on a single device in the future. So currently it is still required to have 2 VULA Interconnections to connect to both OLTs, but only one of them will be billed to the Operator.
- POP1123 in Bridel: This is an FTTH POP of type C with adjacent colocation. Unfortunately we did not get the authorization to install additional outdoor shelters for extend the current colocation space. We therefore offer the possibility to extend the VULA Interconnection via fiber to a nearby POP, i.e. POP231 in Strassen or POP130 in Kehlen.
- POP184 in Vianden: Providing colocation space is not feasible due to the significant transformations required, which cannot be implemented at this location. We therefore offer the possibility to extend VULA Interconnections from POP184 via fiber to a nearby POP, i.e. POP180 in Diekirch or POP190 in Hoscheid.
- POP1158 in Luxembourg/Belair: This is an FTTH POP of type C with adjacent colocation. Authorizations for the installation of planned outdoor shelters were rejected. POST Technologies plans to replace POP1158 with the newly built POP1245 in Luxembourg/Hollerich and therefore offers the possibility to extend the VULA Interconnection via fiber from POP1158 to POP1245.

<b>OLT Name</b>	Stag	ODF1	ODF2	ODF3	VULA Interconnection delivered to
OFX1101-1	3134	FO-POP1101	n/a	n/a	POP1101
OFX1102-1	3129	FO-POP1102	n/a	n/a	POP1102
OFX1103-1	1962	FO-POP1103	n/a	n/a	POP1103
OFX1105-1	71	FO-POP1105	n/a	n/a	POP1105
OFX1109-1	2963	FO-POP1109	n/a	n/a	POP1109
OFX1111-1	1202	FO-POP1111	n/a	n/a	POP1111
OFX1115-1	1964	FO-POP1115	n/a	n/a	POP1115
OFX1116-1	1965	FO-POP1116	n/a	n/a	POP1116
OFX1117-1	115	FO-POP1117	n/a	n/a	POP1117
OFX1118-1	1243	FO-POP1118	n/a	n/a	POP1118
OFX1120-1	1966	FO-POP1120	n/a	n/a	POP1120
OFX1123-1	3611	FO-POP1123	n/a	n/a	POP1123 / POP231 / POP130
OFX1124-1	181	FO-POP1124	n/a	n/a	POP1124
OFX1125-1	1203	FO-POP1125	n/a	n/a	POP1125
OFX1126-1	72	FO-POP1126	n/a	n/a	POP1126
OFX1127-1	74	FO-POP1127	n/a	n/a	POP1127
OFX1128-1	75	FO-POP1128	n/a	n/a	POP1128
OFX1129-1	1244	FO-POP1129	n/a	n/a	POP1129
OFX1123 1	626	FO-POP1131	n/a	n/a	POP1131
OFX1131-1	2247	FO-POP1132	n/a	n/a	POP1132
OFX1132-1 OFX1133-1	1433	FO-POP1133	n/a	n/a	POP1133
OFX1135-1	116	FO-POP1135	n/a	n/a	POP1135
OFX1133-1 OFX1140-1	131	FO-POP1140	n/a	n/a	POP1140
OFX1140-1	1293	FO-POP1143	n/a	n/a	POP1143
OFX1143-1 OFX1144-1	1717	FO-POP1143	n/a	n/a	POP1143
OFX1144-1	120	FO-POP1145	n/a	n/a	POP1145
			1		
OFX1146-1 OFX1147-1	2121	FO-POP1146 FO-POP1147	n/a	n/a n/a	POP1146
OFX1147-1 OFX1149-1	1967	FO-POP1147	n/a		POP1147
	2904	+	n/a	n/a	POP1151
OFX1151-1	3154	FO-POP1151	n/a	n/a	POP1151
OFX1154-1	1971	FO-POP1154	n/a	n/a	POP1154
OFX1155-1	3177	FO-POP1155	n/a	n/a	POP1155
OFX1156-1	1294	FO-POP1156	n/a	n/a	POP1156
OFX1157-1	723	FO-POP1157	n/a	n/a	POP1345
OFX1158-1	1703	FO-POP1158	n/a	n/a	POP1245
OFX1163-1	3133	FO-POP1163	n/a	n/a	POP1163
OFX1164-1	3128	FO-POP1164	n/a	n/a	POP1164
OFX1165-1	3132	FO-POP1165	n/a	n/a	POP1165
OFX1168-1	1371	FO-POP1168	n/a	n/a	POP1168
OFX1169-1	2633	FO-POP1169	n/a	n/a	POP1169
OFX1170-1	2122	FO-POP1170	n/a	n/a	POP1170
OFX1173-1	1405	FO-POP1173	n/a	n/a	POP1173
OFX1179-1	2123	FO-POP1179	n/a	n/a	POP1179
OFX1182-1	108	FO-POP1182	n/a	n/a	POP1182
OFX1183-1	3219	FO-POP1183	n/a	n/a	POP1183
OFX1184-1	1959	FO-POP1184	n/a	n/a	POP1184
OFX1185-1	1718	FO-POP1185	n/a	n/a	POP1185
OFX1186-1	1968	FO-POP1186	n/a	n/a	POP1186
OFX1191-1	3125	FO-POP1191	n/a	n/a	POP1191
OFX1192-1	1605	FO-POP1192	n/a	n/a	POP1192
OFX1196-1	2606	FO-POP1196	n/a	n/a	POP1196
OFX1199-1	3223	FO-POP1199	n/a	n/a	POP1199
OFX1208-1	1969	FO-POP1208	n/a	n/a	POP1208

OLT Name	Stag	ODF1	ODF2	ODF3	VULA Interconnection delivered to
OFX1213-1	1958	FO-POP1213	n/a	n/a	POP1213
OFX1215-1	3220	FO-POP1215	n/a	n/a	POP1215
OFX1218-1	109	FO-POP1218	n/a	n/a	POP1218
OFX1219-1	1373	FO-POP1219	n/a	n/a	POP1219
OFX1222-1	73	FO-POP1222	n/a	n/a	POP1222
OFX1224-1	76	FO-POP1224	n/a	n/a	POP1224
OFX1225-1	1245	FO-POP1225	n/a	n/a	POP1225
OFX1227-1	1175	FO-POP1227	n/a	n/a	POP1227
OFX1229-1	167	FO-POP1229	n/a	n/a	POP1229
OFX1231-1	2434	FO-POP1231	n/a	n/a	POP1231
OFX1232-1	323	FO-POP1232	n/a	n/a	POP1232
OFX1234-1	721	FO-POP1234	n/a	n/a	POP1234
OFX1236-1	1950	FO-POP1236	n/a	n/a	POP1236
OFX1238-1	719	FO-POP1238	n/a	n/a	POP1238
OFX1239-1	1863	FO-POP1239	n/a	n/a	POP1239
OFX1240-1	117	FO-POP1240	n/a	n/a	POP1240
OFX1241-1	615	FO-POP1241	n/a	n/a	POP1241
OFX1242-1	616	FO-POP1242	n/a	n/a	POP1242
OFX1243-1	724	FO-POP1243	n/a	n/a	POP1243
OFX1245-1	787	FO-POP1245	n/a	n/a	POP1245
OFX1253-1	0730	FO-POP1252	n/a	n/a	POP1252
OFX1252-1 OFX1261-1	112	FO-POP1252	FO-VH261	n/a	POP1232 POP1261
OFX1267-1	788	FO-POP1267	n/a	n/a	POP1267
OFX1207-1	2906	FO-POP1207	FO-VH21	n/a	POP120
	1764	FO-POP120	FO-VH21	-	POP120 POP130
OFX130-1	2907	+	1	n/a	
OFX132-1		FO-POP132	FO-VH32	n/a	POP132
OFX133-1	3097	FO-POP133	FO-VH33	n/a	POP134
OFX134-1	3355	FO-POP134	FO-VH34	n/a	POP134
OFX135-1	100	FO-POP135	FO-VH35 FO-VH36	n/a	POP135
OFX136-1	1946	FO-POP136	1	n/a	POP136
OFX138-1	1404	FO-POP138	FO-VH38	n/a	POP138
OFX139-1	3243	FO-POP139	FO-VH39	n/a	POP143
OFX143-1	3070	FO-POP143	FO-VH43	n/a	POP143
OFX144-1	3222	FO-POP144	FO-VH44	n/a	POP144
OFX148-1	1606	FO-POP148	FO-VH48	n/a	POP148
OFX150-1	3126	FO-POP150	FO-VH50	n/a	POP150
OFX151-1	3357	FO-POP151	FO-VH51	n/a	POP151
OFX153-1	3483	FO-POP153	FO-VH53	n/a	POP153
OFX155-1	3242	FO-POP155	FO-VH55	n/a	POP155
OFX156-1	2903	FO-POP156	FO-VH56	n/a	POP156
OFX159-1	3221	FO-POP159	FO-VH59	n/a	POP159
OFX161-1	0784	FO-POP161	FO-VH61	n/a	POP161
OFX163-1	1407	FO-POP163	FO-VH63	n/a	POP163
OFX164-1	1608	FO-POP164	FO-VH64	n/a	POP164
OFX167-1	790	FO-POP167	n/a	n/a	POP167
OFX169-1	2947	FO-POP169	FO-VH69	n/a	POP169
OFX171-1	2948	FO-POP171	FO-VH71	n/a	POP171
OFX173-1	2215	FO-POP173	FO-VH73	FO-VH373	POP173
OFX180-1	1024	FO-POP180	FO-VH80	FO-VH82	POP180
OFX184-1	3359	FO-POP184	FO-VH84	n/a	POP180 / POP190
OFX185-1	2219	FO-POP185	FO-VH85	n/a	POP185
OFX186-1	1952	FO-POP186	FO-VH86	n/a	POP186
OFX187-1	3360	FO-POP187	FO-VH87	n/a	POP187

OLT Name	Stag	ODF1	ODF2	ODF3	VULA Interconnection delivered to
OFX189-1	1221	FO-POP189	FO-VH89	n/a	POP189
OFX190-1	3361	FO-POP190	FO-VH90	n/a	POP190
OFX193-1	1953	FO-POP193	FO-VH93	n/a	POP193
OFX194-1	1954	FO-POP194	FO-VH94	n/a	POP194
OFX195-1	3245	FO-POP195	FO-VH95	n/a	POP195
OFX197-1	1602	FO-POP197	FO-VH97	n/a	POP197
OFX231-1	2369	FO-POP231	FO-VH231	FO-VH31	POP231
OFX237-1	101	FO-POP237	FO-VH237	FO-VH37	POP237
OFX272-1	3087	FO-POP272	FO-VH272	FO-VH72	POP272
OFX274-1	114	FO-POP274	FO-VH274	FO-VH74	POP274
OFX275-1	119	FO-POP275	FO-VH275	FO-VH75	POP275
OFX276-1	111	FO-POP276	FO-VH276	n/a	POP276
OFX277-1	1716	FO-POP277	FO-VH277	n/a	POP277
OFX278-1	1951	FO-POP278	FO-VH278	FO-VH78	POP278
OFX281-1	3990	FO-POP281	FO-VH281	n/a	POP281
OFX291-1	3627	FO-POP291	FO-VH291	FO-VH91	POP291
OFX43-1	1377	FO-VH43	n/a	n/a	POP143
OFX44-1	1265	FO-VH44	n/a	n/a	POP144
OFX48-1	3 <del>4</del> 85	FO-VH48	n/a	n/a	POP148
OFX58-1	2029	FO-VH58	n/a	n/a	POP159
OFX60-1	1890	FO-VH60	n/a	n/a	POP1239
OFX61-1	2042	FO-VH61	n/a	n/a	POP161
OFX67-1	1199	FO-VH67	n/a	n/a	POP167
OFX76-1	2216	FO-VH76	n/a	n/a	POP276
OFX77-1	2217	FO-VH77	n/a	n/a	POP277
OFX79-1	2218	FO-VH79	FO-POP279	FO-VH279	POP279
OFX81-1	1889	FO-VH81	n/a	n/a	POP281
OFX88-1	1220	FO-VH88	n/a	n/a	POP281
OFX886-1	1201	FO-POP886	n/a	n/a	POP886
OFX887-1	1374	FO-POP887	n/a	n/a	POP887
OFX888-1	3484	FO-POP888	n/a	n/a	POP888
OFX889-1	1266	FO-POP889	n/a	n/a	POP889
OFX890-1	1173	FO-POP890	n/a	n/a	POP890
OFX891-1	1246	FO-POP891	n/a	n/a	POP891
OFX892-1	1432	FO-POP892	n/a	n/a	POP892
OFX896-1	720	FO-POP896	n/a	n/a	POP896
OFX898-1	3131	FO-POP898	n/a	n/a	POP898
OFX899-1	3130	FO-POP899	n/a	n/a	POP899
OFX904-1	3244	FO-POP904	n/a	n/a	POP904
OFX983-1	3127	FO-POP983	n/a	n/a	POP983

The following table summarizes the information from the table above in a different way and shows all the VULA Interconnections available in a specific POP.

Colocation	VULA Interconnections on the following OLT
POP1101	OFX1101-1
POP1102	OFX1102-1
POP1103	OFX1103-1
POP1105	OFX1105-1
POP1109	OFX1109-1
POP1111	OFX1111-1
POP1115	OFX1115-1
POP1116	OFX1116-1
POP1117	OFX1117-1
POP1118	OFX1118-1
POP1120	OFX1120-1
POP1123	OFX1123-1 (for existing colocations)
POP1124	OFX1124-1
POP1125	OFX1125-1
POP1126	OFX1126-1
POP1127	OFX1127-1
POP1128	OFX1128-1
POP1129	OFX1129-1
POP1131	OFX1131-1
POP1132	OFX1132-1
POP1133	OFX1133-1
POP1135	OFX1135-1
POP1140	OFX1140-1
POP1143	OFX1143-1
POP1144	OFX1144-1
POP1145	OFX1145-1
POP1146	OFX1146-1
POP1147	OFX1147-1
POP1149	OFX1149-1
POP1151	OFX1151-1
POP1154	OFX1154-1
POP1155	OFX1155-1
POP1156	OFX1156-1
POP1157	OFX1157-1
POP1158	n/a (cf. POP1245)
POP1163	OFX1163-1
POP1164	OFX1164-1
POP1165	OFX1165-1
POP1168	OFX1168-1
POP1169	OFX1169-1
POP1170	OFX1170-1
POP1173	OFX1173-1
POP1179	OFX1179-1
POP1182	OFX1182-1
POP1183	OFX1183-1
POP1184	OFX1184-1
POP1185	OFX1185-1
POP1186	OFX1186-1
POP1191	OFX1191-1

OPOP1192 OFX1192-1 POP1196 OFX1196-1 POP1197 OFX1196-1 POP1199 OFX1199-1 POP1208 OFX1208-1 POP1213 OFX1213-1 POP1213 OFX1215-1 POP1218 OFX1218-1 POP1219 OFX1219-1 POP1220 OFX1224-1 POP1222 OFX1222-1 POP1224 OFX1224-1 POP1225 OFX1225-1 POP1227 OFX1227-1 POP1229 OFX1231-1 POP1230 OFX1231-1 POP1230 OFX1231-1 POP1231 OFX1231-1 POP1230 OFX1231-1 POP1231 OFX1231-1 POP1232 OFX1232-1 POP1234 OFX1234-1 POP1236 OFX1236-1 POP1237 OFX1239-1 POP1238 OFX1238-1 POP1239 OFX1239-1 POP1240 OFX1240-1 POP1240 OFX1240-1 POP1240 OFX1240-1 POP1241 OFX1241-1 POP1242 OFX1241-1 POP1243 OFX1241-1 POP1245 OFX1241-1 POP1245 OFX1245-1 OFX1158-1 POP1266 OFX1261-1 POP1267 OFX1261-1 POP1267 OFX1261-1 POP130 OFX130-1 OFX130-1 OFX130-1 OFX130-1 OFX130-1 POP131 OFX130-1 POP132 OFX133-1 POP133 OFX133-1 POP134 OFX134-1 POP135 OFX138-1 POP136 OFX136-1 POP137 OFX138-1 POP139 OFX138-1 POP139 OFX138-1 POP139 OFX138-1 POP130 OFX138-1 POP130 OFX138-1 POP131 OFX138-1 POP131 OFX138-1 POP132 OFX138-1 POP133 OFX138-1 POP134 OFX138-1 POP135 OFX138-1 POP136 OFX138-1 POP137 OFX138-1 POP148 OFX138-1 POP159 OFX138-1 POP150 OFX150-1	Colocation	VULA Interconnections on the following OLT
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POP1238         OFX1238-1           POP1239         OFX1239-1 OFX60-1 (free of charge, bundled with OFX1239-1)           POP1240         OFX1240-1 OFX1241-1           POP1241         OFX1241-1 OFX1242-1           POP1242         OFX1242-1 OFX1243-1           POP1243         OFX1243-1 OFX1245-1 OFX1158-1           POP1245         OFX1245-1 OFX1158-1           POP1260         OFX1252-1           POP1261         OFX1261-1 OFX126-1           POP120         OFX1267-1 OFX130-1 OFX130-1 OFX133-1           POP130         OFX130-1 OFX133-1           POP131         OFX133-1 OFX134-1           POP134         OFX135-1 OFX136-1           POP135         OFX136-1 OFX143-1 OFX44-1 (free of charge, bundled with OFX143-1)           POP144         OFX144-1 OFX44-1 (free of charge, bundled with OFX144-1)           POP148         OFX150-1 OFX150-1           POP150         OFX150-1 OFX153-1           POP151         OFX155-1 OFX159-1 OFX58-1           POP159         OFX159-1 OFX58-1           POP161         OFX161-1 OFX61-1 (free of charge, bundled with OFX161-1)	POP1234	OFX1234-1
POP1239         OFX1239-1 OFX60-1 (free of charge, bundled with OFX1239-1)           POP1240         OFX1240-1           POP1241         OFX1241-1           POP1242         OFX1242-1           POP1243         OFX1243-1           POP1245         OFX1245-1 OFX1158-1           POP1250         OFX1252-1           POP1261         OFX1252-1           POP1262         OFX1252-1           POP1263         OFX1261-1           POP1264         OFX1261-1           POP1265         OFX1267-1           POP1266         OFX1267-1           POP127         OFX130-1           OFX129-1         OFX130-1           OFX130-1         OFX132-1           POP130         OFX133-1           POP131         OFX135-1           POP132         OFX135-1           POP133         OFX136-1           POP134         OFX138-1           POP139         OFX139-1           OFX143-1         OFX43-1 (free of charge, bundled with OFX143-1)           POP144         OFX44-1 (free of charge, bundled with OFX144-1)           POP150         OFX150-1           POP151         OFX150-1           POP152         OFX155-1	POP1236	OFX1236-1
POP1239 OPX60-1 (free of charge, bundled with OFX1239-1) POP1240 OFX1240-1 POP1241 OFX1241-1 POP1242 OFX1242-1 POP1243 OFX1243-1 POP1245 OFX1245-1 POP1250 OFX1252-1 POP1261 OFX1261-1 POP1267 OFX1267-1 POP120 OFX120-1 POP130 OFX130-1 OFX130-1 OFX133-1 POP130 OFX133-1 POP131 OFX134-1 POP132 OFX135-1 POP134 OFX134-1 POP135 OFX135-1 POP136 OFX136-1 POP138 OFX138-1 POP139 OFX139-1 POP140 OFX144-1 OFX144-1 (free of charge, bundled with OFX143-1) POP140 OFX148-1 OFX148-1 (free of charge, bundled with OFX144-1) POP150 OFX150-1	POP1238	OFX1238-1
OFX60-1 (free of charge, bundled with OFX1239-1)  POP1240 OFX1240-1  POP1241 OFX1241-1  POP1242 OFX1242-1  POP1243 OFX1243-1  POP1245 OFX1245-1  OFX1158-1  POP1252 OFX1252-1  POP1261 OFX1261-1  POP1267 OFX1267-1  POP120 OFX120-1  POP130 OFX130-1  OFX130-1  OFX132-1  POP132 OFX132-1  POP133 OFX133-1  POP134 OFX134-1  POP135 OFX135-1  POP136 OFX136-1  POP137 OFX138-1  POP138 OFX138-1  POP139 OFX139-1  POP140 OFX144-1  OFX44-1 (free of charge, bundled with OFX143-1)  POP144 OFX144-1  OFX144-1 (free of charge, bundled with OFX144-1)  POP150 OFX150-1  POP151 OFX150-1  POP155 OFX155-1  POP156 OFX155-1  POP159 OFX158-1  POP159 OFX158-1  POP159 OFX158-1  POP150 OFX158-1	POP1239	
POP1241         OFX1241-1           POP1242         OFX1242-1           POP1243         OFX1243-1           POP1245         OFX1245-1 OFX1158-1           POP1252         OFX1252-1           POP1261         OFX1252-1           POP1267         OFX1261-1           POP1268         OFX1267-1           POP120         OFX120-1           POP130         OFX130-1 OFX133-1           POP131         OFX132-1           POP132         OFX132-1           POP133         OFX133-1           POP134         OFX134-1           POP135         OFX135-1           POP136         OFX136-1           POP139         OFX139-1           POP139         OFX143-1 OFX43-1 (free of charge, bundled with OFX143-1)           POP144         OFX144-1 OFX44-1 (free of charge, bundled with OFX144-1)           POP148         OFX150-1           POP150         OFX150-1           POP151         OFX151-1           POP152         OFX155-1           POP153         OFX155-1           POP154         OFX156-1           POP155         OFX156-1           OFX161-1 OFX61-1 (free of charge, bundled with OFX161-1)		•
POP1242         OFX1242-1           POP1243         OFX1243-1           POP1245         OFX1245-1 OFX1158-1           POP1252         OFX1252-1           POP1261         OFX1261-1           POP1267         OFX1267-1           POP120         OFX120-1           POP130         OFX130-1 OFX1123-1           POP131         OFX132-1           POP132         OFX132-1           POP133         OFX133-1           POP134         OFX134-1           POP135         OFX135-1           POP136         OFX135-1           POP138         OFX138-1           POP139         OFX139-1           POP140         OFX143-1 OFX43-1 (free of charge, bundled with OFX143-1)           POP140         OFX144-1 OFX44-1 (free of charge, bundled with OFX144-1)           POP148         OFX148-1 OFX48-1 (free of charge, bundled with OFX148-1)           POP150         OFX150-1           POP151         OFX151-1           POP153         OFX153-1           POP154         OFX156-1           POP155         OFX156-1           POP150         OFX156-1           POP150         OFX161-1 OFX61-1 (free of charge, bundled with OFX161-1)		
POP1243         OFX1243-1           POP1245         OFX1245-1 OFX1158-1           POP1252         OFX1252-1           POP1261         OFX1261-1           POP1267         OFX1267-1           POP120         OFX120-1           POP130         OFX130-1 OFX1123-1           POP131         OFX132-1           POP132         OFX132-1           POP133         OFX133-1           POP134         OFX134-1           POP135         OFX135-1           POP136         OFX135-1           POP138         OFX138-1           POP139         OFX139-1           POP140         OFX143-1 OFX43-1 (free of charge, bundled with OFX143-1)           POP143         OFX144-1 OFX44-1 (free of charge, bundled with OFX144-1)           POP148         OFX148-1 OFX48-1 (free of charge, bundled with OFX148-1)           POP150         OFX150-1           POP151         OFX150-1           POP153         OFX155-1           POP154         OFX156-1           POP155         OFX156-1           POP159         OFX161-1 OFX61-1 (free of charge, bundled with OFX161-1)		
POP1245         OFX1245-1 OFX1158-1           POP1252         OFX1252-1           POP1261         OFX1261-1           POP1267         OFX1267-1           POP120         OFX120-1           POP130         OFX130-1 OFX1123-1           POP131         OFX132-1           POP132         OFX132-1           POP133         OFX133-1           POP134         OFX134-1           POP135         OFX135-1           POP136         OFX138-1           POP139         OFX138-1           POP139         OFX143-1 OFX43-1 (free of charge, bundled with OFX143-1)           POP143         OFX143-1 (free of charge, bundled with OFX144-1)           POP144         OFX44-1 (free of charge, bundled with OFX144-1)           POP148         OFX148-1 OFX48-1 (free of charge, bundled with OFX148-1)           POP150         OFX150-1           POP151         OFX151-1           POP152         OFX155-1           POP153         OFX156-1           POP159         OFX159-1 OFX58-1           POP150         OFX159-1 OFX58-1           POP151         OFX161-1 (free of charge, bundled with OFX161-1)		
POP124S         OFX1158-1           POP1252         OFX1252-1           POP1261         OFX1261-1           POP1267         OFX1267-1           POP120         OFX130-1           POP130         OFX130-1           OFX1123-1         OPV132           POP132         OFX132-1           POP133         OFX133-1           POP134         OFX134-1           POP135         OFX135-1           POP136         OFX136-1           POP139         OFX138-1           POP139         OFX139-1           POP143         OFX143-1           OFX43-1 (free of charge, bundled with OFX143-1)           POP144         OFX144-1           OFX44-1 (free of charge, bundled with OFX144-1)           POP148         OFX150-1           POP150         OFX150-1           POP151         OFX151-1           POP153         OFX153-1           POP154         OFX155-1           POP155         OFX155-1           POP156         OFX159-1           OFX58-1         OFX61-1 (free of charge, bundled with OFX161-1)	POP1243	
POP1261         OFX1261-1           POP1267         OFX1267-1           POP120         OFX120-1           POP130         OFX130-1 OFX1123-1           POP132         OFX132-1           POP133         OFX132-1           POP134         OFX133-1           POP135         OFX134-1           POP136         OFX135-1           POP138         OFX138-1           POP139         OFX139-1           POP143         OFX143-1 OFX43-1 (free of charge, bundled with OFX143-1)           POP144         OFX144-1 OFX44-1 (free of charge, bundled with OFX144-1)           POP148         OFX148-1 OFX48-1 (free of charge, bundled with OFX148-1)           POP150         OFX150-1           POP151         OFX151-1           POP153         OFX153-1           POP154         OFX155-1           POP155         OFX155-1           POP150         OFX156-1           POP150         OFX159-1 OFX58-1           POP150         OFX159-1 OFX58-1           POP150         OFX161-1 OFX61-1 (free of charge, bundled with OFX161-1)	POP1245	
POP1267         OFX1267-1           POP120         OFX120-1           POP130         OFX130-1           OFX132-1         OFX132-1           POP132         OFX132-1           POP133         OFX133-1           POP134         OFX134-1           POP135         OFX135-1           POP136         OFX136-1           POP138         OFX138-1           POP139         OFX143-1           OFX143-1         OFX44-1 (free of charge, bundled with OFX143-1)           POP143         OFX144-1           OFX44-1 (free of charge, bundled with OFX144-1)           OFX148-1         OFX48-1 (free of charge, bundled with OFX148-1)           POP150         OFX150-1           POP151         OFX151-1           POP153         OFX153-1           POP154         OFX155-1           POP155         OFX155-1           POP156         OFX156-1           POP159         OFX159-1 OFX58-1           POP161         OFX161-1 OFX61-1 (free of charge, bundled with OFX161-1)	POP1252	OFX1252-1
POP120         OFX120-1           POP130         OFX130-1           OFX1123-1         OFX1123-1           POP132         OFX132-1           POP133         OFX133-1           POP134         OFX134-1           POP135         OFX135-1           POP136         OFX136-1           POP138         OFX138-1           POP139         OFX143-1           POP140         OFX143-1           OFX143-1         OFX44-1 (free of charge, bundled with OFX143-1)           POP144         OFX144-1           OFX48-1 (free of charge, bundled with OFX144-1)           POP148         OFX150-1           POP150         OFX150-1           POP151         OFX150-1           POP153         OFX153-1           POP154         OFX155-1           POP155         OFX155-1           POP156         OFX156-1           OFX58-1         OFX58-1           POP150         OFX161-1 (free of charge, bundled with OFX161-1)	POP1261	OFX1261-1
POP130         OFX130-1 OFX1123-1           POP132         OFX132-1           POP133         OFX133-1           POP134         OFX134-1           POP135         OFX135-1           POP136         OFX136-1           POP138         OFX138-1           POP139         OFX139-1           POP143         OFX143-1 (free of charge, bundled with OFX143-1)           POP144         OFX144-1 (free of charge, bundled with OFX144-1)           POP148         OFX148-1 (free of charge, bundled with OFX148-1)           POP150         OFX150-1           POP151         OFX151-1           POP153         OFX153-1           POP154         OFX155-1           POP155         OFX155-1           POP150         OFX155-1           POP150         OFX156-1           POP159         OFX159-1 OFX58-1           POP161         OFX161-1 (free of charge, bundled with OFX161-1)	POP1267	OFX1267-1
POP130 OFX1123-1 POP132 OFX132-1 POP133 OFX133-1 POP134 OFX134-1 POP135 OFX135-1 POP136 OFX136-1 POP138 OFX138-1 POP139 OFX139-1 POP143 OFX143-1 OFX44-1 (free of charge, bundled with OFX143-1) POP144 OFX144-1 OFX44-1 (free of charge, bundled with OFX144-1) POP150 OFX150-1 POP151 OFX151-1 POP153 OFX153-1 POP156 OFX156-1 POP159 OFX159-1 OFX161-1 (free of charge, bundled with OFX161-1)	POP120	OFX120-1
POP132         OFX132-1           POP133         OFX133-1           POP134         OFX134-1           POP135         OFX135-1           POP136         OFX136-1           POP138         OFX138-1           POP139         OFX143-1           POP143         OFX143-1           OFX143-1         OFX44-1 (free of charge, bundled with OFX143-1)           POP144         OFX148-1           OFX48-1 (free of charge, bundled with OFX144-1)           POP150         OFX150-1           POP151         OFX151-1           POP153         OFX153-1           POP154         OFX155-1           POP155         OFX155-1           POP156         OFX156-1           POP159         OFX159-1           OFX161-1         OFX161-1           OFX161-1         OFX61-1 (free of charge, bundled with OFX161-1)	POP130	
POP134         OFX133-1           POP135         OFX135-1           POP136         OFX135-1           POP138         OFX136-1           POP139         OFX138-1           POP143         OFX143-1 OFX43-1 (free of charge, bundled with OFX143-1)           POP144         OFX144-1 OFX44-1 (free of charge, bundled with OFX144-1)           POP148         OFX148-1 OFX48-1 (free of charge, bundled with OFX148-1)           POP150         OFX150-1           POP151         OFX151-1           POP153         OFX153-1           POP154         OFX155-1           POP155         OFX155-1           POP150         OFX156-1           POP159         OFX159-1 OFX58-1           POP161         OFX161-1 OFX61-1 (free of charge, bundled with OFX161-1)	POP132	
POP134         OFX134-1           POP135         OFX135-1           POP136         OFX136-1           POP138         OFX138-1           POP139         OFX139-1           POP143         OFX143-1 (free of charge, bundled with OFX143-1)           POP144         OFX144-1 (free of charge, bundled with OFX144-1)           POP148         OFX148-1 (free of charge, bundled with OFX148-1)           POP150         OFX150-1           POP151         OFX151-1           POP153         OFX153-1           POP154         OFX155-1           POP155         OFX155-1           POP150         OFX156-1           POP159         OFX156-1           OFX159-1 (Free of charge, bundled with OFX161-1)         OFX161-1 (free of charge, bundled with OFX161-1)		
POP135         OFX135-1           POP136         OFX136-1           POP138         OFX138-1           POP139         OFX139-1           POP143         OFX143-1 OFX43-1 (free of charge, bundled with OFX143-1)           POP144         OFX144-1 OFX44-1 (free of charge, bundled with OFX144-1)           POP148         OFX148-1 OFX48-1 (free of charge, bundled with OFX148-1)           POP150         OFX150-1           POP151         OFX151-1           POP153         OFX153-1           POP154         OFX155-1           POP155         OFX156-1           POP159         OFX159-1 OFX58-1           POP161         OFX161-1 OFX61-1 (free of charge, bundled with OFX161-1)		
POP136 OFX136-1 POP138 OFX138-1 POP139 OFX139-1 POP143 OFX43-1 (free of charge, bundled with OFX143-1) POP144 OFX144-1 OFX44-1 (free of charge, bundled with OFX144-1) POP148 OFX148-1 OFX148-1 OFX150-1 POP150 OFX150-1 POP151 OFX151-1 POP153 OFX153-1 POP155 OFX155-1 POP156 OFX156-1 POP159 OFX159-1 OFX161-1 OFX61-1 (free of charge, bundled with OFX161-1)		
POP138         OFX138-1           POP139         OFX139-1           POP143         OFX143-1 OFX43-1 (free of charge, bundled with OFX143-1)           POP144         OFX144-1 OFX44-1 (free of charge, bundled with OFX144-1)           POP148         OFX148-1 OFX48-1 (free of charge, bundled with OFX148-1)           POP150         OFX150-1           POP151         OFX151-1           POP153         OFX153-1           POP155         OFX155-1           POP156         OFX156-1           POP159         OFX159-1 OFX58-1           POP161         OFX161-1 OFX61-1 (free of charge, bundled with OFX161-1)		
POP139         OFX139-1           POP143         OFX143-1 OFX43-1 (free of charge, bundled with OFX143-1)           POP144         OFX144-1 OFX44-1 (free of charge, bundled with OFX144-1)           POP148         OFX148-1 OFX48-1 (free of charge, bundled with OFX148-1)           POP150         OFX150-1           POP151         OFX151-1           POP153         OFX153-1           POP155         OFX155-1           POP156         OFX156-1           POP159         OFX159-1 OFX58-1           POP161         OFX161-1 OFX61-1 (free of charge, bundled with OFX161-1)		
POP143         OFX143-1 OFX43-1 (free of charge, bundled with OFX143-1)           POP144         OFX144-1 OFX44-1 (free of charge, bundled with OFX144-1)           POP148         OFX148-1 OFX48-1 (free of charge, bundled with OFX148-1)           POP150         OFX150-1           POP151         OFX151-1           POP153         OFX153-1           POP155         OFX155-1           POP156         OFX156-1           POP159         OFX159-1 OFX58-1           POP161         OFX161-1 OFX61-1 (free of charge, bundled with OFX161-1)		
POP143 OFX43-1 (free of charge, bundled with OFX143-1) POP144 OFX144-1 OFX44-1 (free of charge, bundled with OFX144-1) POP148 OFX148-1 OFX48-1 (free of charge, bundled with OFX148-1) POP150 OFX150-1 POP151 OFX151-1 POP153 OFX153-1 POP155 OFX155-1 POP156 OFX156-1 POP159 OFX159-1 OFX58-1 POP161 OFX61-1 (free of charge, bundled with OFX161-1)		
POP144 OFX44-1 (free of charge, bundled with OFX144-1) POP148 OFX148-1 OFX48-1 (free of charge, bundled with OFX148-1) POP150 OFX150-1 POP151 OFX151-1 POP153 OFX153-1 POP155 OFX155-1 POP156 OFX156-1 POP159 OFX159-1 OFX58-1 POP161 OFX61-1 (free of charge, bundled with OFX161-1)	POP143	OFX43-1 (free of charge, bundled with OFX143-1)
POP148 OFX48-1 (free of charge, bundled with OFX148-1) POP150 OFX150-1 POP151 OFX151-1 POP153 OFX153-1 POP155 OFX155-1 POP156 OFX156-1 POP159 OFX159-1 OFX58-1 POP161 OFX61-1 (free of charge, bundled with OFX161-1)	POP144	0.7.2
POP150         OFX150-1           POP151         OFX151-1           POP153         OFX153-1           POP155         OFX155-1           POP156         OFX156-1           POP159         OFX159-1 OFX58-1           POP161         OFX161-1 OFX61-1 (free of charge, bundled with OFX161-1)	POP148	OFX148-1
POP151 OFX151-1 POP153 OFX153-1 POP155 OFX155-1 POP156 OFX156-1 POP159 OFX159-1 OFX58-1 POP161 OFX61-1 (free of charge, bundled with OFX161-1)	POP150	
POP153 OFX153-1 POP155 OFX155-1 POP156 OFX156-1 POP159 OFX159-1 OFX58-1 POP161 OFX61-1 (free of charge, bundled with OFX161-1)	POP151	OFX151-1
POP155 OFX155-1 POP156 OFX156-1 POP159 OFX58-1 POP161 OFX61-1 (free of charge, bundled with OFX161-1)		
POP156 OFX156-1  POP159 OFX159-1		
POP159 OFX159-1 OFX58-1  POP161 OFX161-1 OFX61-1 (free of charge, bundled with OFX161-1)		
POP159 OFX58-1 POP161 OFX161-1 OFX61-1 (free of charge, bundled with OFX161-1)		
OFX61-1 (free of charge, bundled with OFX161-1)	POP159	
POP163 OFX163-1	POP161	
	POP163	OFX163-1

Colocation	VULA Interconnections on the following OLT
POP164	OFX164-1
	OFX167-1
POP167	OFX67-1 (free of charge, bundled with OFX167-1)
POP169	OFX169-1
POP171	OFX171-1
POP173	OFX173-1
POP180	OFX180-1
POP160	OFX184-1
POP184	n/a (cf. POP180 and POP190)
POP185	OFX185-1
POP186	OFX186-1
POP187	OFX187-1
POP189	OFX189-1
POP190	OFX190-1
FOF190	OFX184-1
POP193	OFX193-1
POP194	OFX194-1
POP195	OFX195-1
POP197	OFX197-1
POP231	OFX231-1
	OFX1123-1
POP237	OFX237-1
POP272	OFX272-1
POP274	OFX274-1
POP275	OFX275-1
POP276	OFX276-1
	OFX76-1 (free of charge, bundled with OFX276-1)
POP277	OFX277-1 OFX77-1 (free of charge, bundled with OFX277-1)
POP278	OFX278-1
POP279	OFX79-1
1012/3	OFX281-1
POP281	OFX81-1 (free of charge, bundled with OFX281-1)
	OFX88-1
POP291	OFX291-1
POP886	OFX886-1
POP887	OFX887-1
POP888	OFX888-1
POP889	OFX889-1
POP890	OFX890-1
POP891	OFX891-1
POP892	OFX892-1
POP896	OFX896-1
POP898	OFX898-1
POP899	OFX899-1
POP904	OFX904-1
POP983	OFX983-1

# 3. VULA Pricing

Pricing - as found in the Reference Unbundling Offer (RUO) version 2.4.0:

Item	Euro (excl. VAT)
Connection charge for a new or modified VULA connection carried out remotely without any intervention at POP or SLCP level or at end customer's premises	10,79
Connection charge for a new or modified VULA connection, intervention only at POP or SLCP level, not requiring any intervention at end customer's premises	75,09
Connection charge for a new or modified VULA connection, intervention at ODF and end customer's premises, including travel costs	118,79
Specific use case for remote modification: Modification of the profile (upgrade/downgrade) of an existing VULA connection	Free of charge
Migration of an existing VULA Access from Donor to Recipient Operator carried out remotely without any intervention at POP or SLCP level or at end customer's premises	16,91
Conversion of an existing fibre-based Bitstream Service to a VULA Service carried out remotely, not requiring any intervention at end customer's premises	10,79
Negative answer to an VULA order* or cancellation of an order before activation	16,21
Monthly rental for a VULA Service (any service profile)	21,05
Business SLA activation fee per VULA service	9,-
Business SLA monthly fee per VULA service	9,-
Connection charge for a VULA Interconnection (10GE or 100GE port)	1.400,-
Monthly rental of a 10GE VULA Interconnection (per 10GE port)	13,30
Monthly rental of a 100GE VULA Interconnection (per 100 GE port)	41,78

<sup>\*</sup>Only applicable in case POST Technologies' search engine showed clearly that the specific address is not served by POST Technologies' fiber network.