Annex 3: Wholesale physical network infrastructure access

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	Same product market as EU definition?	Geographic market(s)	Operator(s) with SMP	Remedies imposed on SMP operator(s)
Austria	Wholesale network infrastructure access to metallic loops at a fixed location (excl. fibre FTTH and cable TV)	National	A1 Telekom Austria	- provision of access to LLU and SLU on reasonable request, including collocation, duct access, subsidiary dark fibre access, and virtual unbundling; - rules on where and under which conditions ANOs may deploy VDSL from the MDF; - non discrimination and publication of a reference offer for access to LLU/SLU, for migration to NGA, for duct and dark fibre access, for virtual unbundling; - price control based on minimum of cost orientation and retail minus for LLU/SLU and virtual unbundling, and based on cost orientation for duct and dark fibre access; - transparency on network features and related data and accounting separation.
Belgium	Wholesale network infrastructure access to metallic loops at a fixed location (excl. fibre)	National	Belgacom	- access (technology neutral); - non discrimination; - transparency (reference offer and KPIs); - accounting separation; - charges oriented on the costs of an efficient operator; In the addendum (Nov. 2008) BIPT asked Belgacom to : - publish information on evolution of its network per region for a 5-year period; - propose some migration solutions; - submit to BIPT a bitstream access offer adapted to the future Ethernet network.
Bulgaria	Wholesale network infrastructure access to copper and fibre loops at a fixed location	National	Bulgarian Telecommunication Company	- access to and use of specific network facilities (NGA services and ducts); - transparency, incl. publication of reference offer; - non discrimination; - cost oriented price control, based on new CCA-LRIC methodology (only for copper loops); - prices for access to ducts are based on a pricing model developed by CRC, until the setup of new cost model based on the occupied space in the ducts; - CRC proposes to withdraw the obligation imposed to BTC to provide access to towers and other adjacent buildings and facilities.
Croatia	Wholesale network infrastructure access to copper and point to point fibre loops at a fixed location	National	Hrvatski Telekom	- access to full and shared unbundled access to copper local loop and sub-loop including collocation; access to P2P fiber LLU - in case of SLU: HT must provide access to ducts, if there is no place in ducts must provide dark fibre, if there is no dark fibre must provide WWDM - transparency (incl. reference offer); - non discrimination; - accounting separation; - price control for copper: ful LLU: HCA/FAC model of incumbent (NRA is in process of creating its own cost model) shared LLU - benchmark EU 27 without outliers (NRA is in process of creating its own cost model) - fiber local loop - HT must publish terms and prices for point to point fibre LLU within 90 days from the receipt of a reasonable request
Cyprus	Wholesale network infrastructure access to metallic loops at a fixed location (excl. fibre)	National	CYTA	- full and shared unbundled access to local loop and sub-loop and collocation; - access to ducts where copper infrastructure replaced by fibre (up to end users' premises); - transparency (incl. reference offer); - non discrimination; - accounting separation; - price control: bottom-up LRIC, with margin squeeze model.
Czech Republic	Wholesale network infrastructure access to copper and fibre loops (excl. other technologies like cable, WLL (FWA, WiFi…))	National	Telefónica O2 CR	- access (copper only); - transparency, incl. RUO and the provision of information about planned phasing out of copper infrastructure (copper only); - non discrimination (copper only); - accounting separation (both copper and fibre); - price control – maximum prices based on LRIC, including for collocation services (copper only).

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Denmark	Wholesale network infrastructure access to metallic loops at a fixed location (excl. fibre)	National	TDC	- wholesale unbundled access on reasonable request, incl full/shared LLU and SLU, collocation and internal cabling; - 'best effort' full access to lines no longer used by TDC; - migration from shared to full LLU, from LLU to SLU, from BSA to LLU; - access to ducts and dark fibre for backhaul; - price control based on LRAIC; - cost accounting; - non discrimination; - reference offer, including publication of SLA and KPIs; - transparency, incl. any access network reconfiguration plans; - accounting separation.
Estonia	Wholesale network infrastructure accessto copper and fibre loops at a fixed location (incl. ancillary services collocation, duct access and shared use of buildings)	National	Elion	- provision of access on reasonable request (dark fibre not covered but subject to commercial negotiations 6-month prior notification if copper loops replaced by fibre); - transparency, incl. publication of reference offers for LLU and duct access (but not for collocation); - non-discrimination; - accounting separation; - cost orientation based on fully distributed historic costs for copper loops and duct access only (i.e. not for fibre-based access).
Finland	Wholesale network infrastructure access to copper and fibre loops at a fixed location	Regional	32 operators	**All operators with SMP:** - provision of access (full and shared access to local loop and sub-loop) and collocation; - reference offer; - non-discrimination; - cost orientation for copper loops only (i.e. not applying to fibre); - cost accounting (operators can choose the CAS); **9 largest operators with SMP:** - accounting separation.
France	Wholesale network infrastructure access to copper and fibre loops at a fixed location (incl. civil engineering infrastructure).	National	France Télécom	Remedies on copper loops only. - LLU; - access to civil engineering infrastructure, incl. ducts and poles; - synchronisation; - migration; - non-discrimination; - transparency (reference offer); - differentiated QoS; - SLA; - cost orientation and prohibition of predatory pricing; - accounting separation.
Germany	Wholesale network infrastructure access to copper and fibre loops at a fixed location	National	Telekom Deutschland	- access to copper and fibre loops, as well as OPAL/ISIS hybrid copper-fibre loops, full unbundling, unbundling of sub-loops and access to parts of the frequency spectrum (shared unbundling / wavelength multiplexing) and collocation; - access to ducts between the central office and street cabinets, or to dark fibre if access to ducts is not available; - reference offer; - non discrimination; - accounting separation; - ex ante price control based on costs of efficient service provision (LRIC) for copper loops; - ex post price control for fibre loops.

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Greece	Wholesale network infrastructure access to metallic loops at a fixed location (excl. fibre, bitstream access and access via alternative technologies, i.e. cable TV – no provision in Greece, fixed wireless networks, and mobile networks)	National	OTE	- access to full and shared copper LLU, collocation and access to ducts, especially to the part from the outdoor cabinet to the incumbent's MDF (including access to manholes and dark fibre); - requirement to publish a Reference Unbundling Offer with SLA, to be approved by EETT; - non discrimination in favor of OTE's own retail arm (including subsidiaries and affiliated undertakings); - accounting separation; - price control (based on cost orientation using LRAIC/current costs) and cost accounting obligation; - transparency. Inter alia, obligation not to withdraw interconnection points, without prior notification of OLOs and EETT, at least 5 years in advance. Provide EETT with information regarding the status of its access network (especially in cases of a) withdrawing copper network and b) development of optical fibre network) every 6 months
Hungary	Wholesale network infrastructure access to copper and fibre loops for the purpose of providing broadband and voice services	3 geographic markets (based on 3 local incumbent operators' operating areas)	Magyar Telekom Invitel UPC (in former Monortel area)	- transparency; - non discrimination; - accounting separation; - access and collocation, now also including access to ducts, fibre unbundling, access to dark fibre, installation of extra fibres on request, backhaul from a mandated access point to a point of presence (up to 25 km); - cost orientation based on LRIC.
Ireland	Wholesale network infrastructure access to metallic loops at a fixed location (excl. fibre)	National	Eircom	- transparency; - non discrimination; - access; - cost orientation (FL-LRIC); - cost accounting and accounting separation; ComReg will further specify details and further implementation of the obligations in relation to Next Generation WPNIA following a public consultation.
Italy	Wholesale network infrastructure access to copper and fibre loops at a fixed location (incl. WLL technologies)	National	Telecom Italia	- Unbundled provision of access to civil infrastructure (ducts, trenches and dark fibre), covering primary segment, secondary segment, access segment to the local exchange, access segment to the curb, terminating segment, in-building cabling (FTTH – fibre; FTTB – copper; FTTN – sub-loop unbundling); - collocation space at local exchange and at intermediate concentration points; - provision of "end-to-end passive infrastructure access"; - transparency, incl. publication of reference offers and service level agreements (SLAs); - non-discrimination, incl. adequate administrative separation between retail and wholesale business units; - accounting separation; - cost accounting (FDC HCA); - cost orientated fees to be set based on BU-LRIC methodology (to be developed in separate proceeding) incl. a risk premium (for newly-built infrastructure only).
Latvia	Wholesale network infrastructure access to copper and fibre loops at a fixed location for the purpose of providing broadband and voice services (excl. Wireless solutions, power line solutions)	National	Lattelecom	- access to and use of specific network facilities; - transparency; - non discrimination; - price control and cost accounting (FDC based on current costs); - accounting separation.
Lithuania	Wholesale network infrastructure access to copper and fibre loops at a fixed location (incl. all twisted metallic pair , FTTH, local shielded twisted pair and unshielded twisted pair in FTTB and in LAN networks; excl. cable and local wireless access networks)	National	TEO LT	- access to twisted metallic pair loops, fibre optic local loops in FTTH networks and associated facilities, incl.backhaul, local STP and UTP loops in FTTB and in LAN networks, civil engineering infrastructure (cable ducts, conduits, manholes and other equipment), dark fibre (and associated facilities); - non-discrimination; - transparency, including publication of a reference offer for all loops to which access is mandated, as well as to civil engineering infrastructure, ducts and dark fibre; - price control/cost accounting, based on cost-oriented prices calculated according to a fully distributed cost (FDC) accounting method; and - accounting separation.

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Luxembourg	Wholesale network infrastructure access to local loops for the purpose of providing broadband and voice services	National	EPT	- access; - non discrimination; - transparency, incl. publication of reference offer for unbundled access and collocation; - accounting separation; - price control and cost accounting: obligation (based on costs of an efficient operator - model not specified).
Malta	Wholesale network infrastructure access to local loops	National	Maltacom	- access; - non discrimination; - transparency, including reference offer; - cost orientation - cost accounting (FAC/HCA); - accounting separation.
Netherlands	Wholesale network infrastructure access to local loops	National	KPN/Reggefiber	- access (LLU, SLU, fibre unbundling); - non discrimination; - reference offer; - price control: cost-oriented multi-year wholesale price cap based on FDC/CCA on copper, risk premium, no excessive return (multi-year price cap based on resulting IRR) on fibre (FTTH).
Norway	Wholesale network infrastructure access at a fixed location (product market definition technology neutral and takes into account self-supply)	National	Telenor	- provision of access on reasonable request incl. full and shared access to LLU and SLU (applies to copper-based access only), collocation, including duct access (both for copper- and fibre-based access) - access to information and support systems; - non-discrimination (internal and external; no accounting separation obligation); - reference offer, including SLA and penalties if SLA not met; - price control and cost accounting based on FAC (move to LRIC considered) with cap of NOK 95 per month on full access, 50% of full access (adjusted to specific costs for full/shared access) for shared access, one-off fees for full LLU and shared access; collocation: cost orientation.
Poland	Wholesale network infrastructure access to copper and fibre loops at a fixed location (excl. HFC cable networks and wireless networks)	National	TPSA	- access obligation for specific network elements and associated facilities, including LLU, SLU, duct access and fibre unbundling where duct access is not available; - easy, open, and non-discriminatory access to the information system used by TP's wholesale arm in order to provide access to wholesale services; - non discrimination; - internal and external Chinese Walls; - KPIs per operator, published quarterly; - 3 months notice when decommissioning copper infrastructure, but access to unbundled loops cannot be withdrawn unless the ANO agrees and TP migrates to an NGA based access; - transparency (incl. reference offer); - accounting separation; - wholesale price control: cost orientation based on a justified costs calculation. UKE may verify the charges using benchmarking or another methodology (retail minus, bottom-up, best practice) and impose the obligation on TPSA to adequately adjust such charges.
Portugal	Wholesale network infrastructure access to local loops at a fixed location.	National	PT Group	- access to, and use of, specific network facilities. Possibility for ANACOM to impose access to dark fibre when access to ducts is not possible; - access to ducts; - non discrimination; - transparency (in LLU offer and ducts offer); - cost orientation and cost accounting (FL-LRIC foreseen); - accounting separation; - financial data reporting.

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Romania	Wholesale network infrastructure access to copper and fibre loops at a fixed location (incl. access at street cabinet level for FTTC/FTTN networks or of the building for FTTB networks when the terminal segment is made of copper twisted pairs or UTP/FTP cable; and fibre loops (FTTH))	National	Romtelecom	- access to “metallic” local loop (i.e. fibre excluded); - transparency; - non discrimination; - accounting separation; - cost oriented price control based on BU-LRAIC model, ANCOM proposes the following prices over a three-year period since adoption of the decision: Full LLU or SLU: €6.02 per month, Shared LLU: €3.17 (until Dec. 31, 2010), €2.14 (from Jan. 1, 2011 to June 30, 2011), and €1.11 (from July 1, 2011).
Slovakia	Withdrawal : Wholesale network infrastructure access to local loops at a fixed location	National	Slovak Telekom	- access to unbundled local loops and sub-loops; - non discrimination; - transparency; - reference offer; - contracts within 15 days after conclusion; - any intended change in reference offer published in advance; - accounting separation; - price control and cost accounting obligation including collocation (LRIC).
Slovenia	Wholesale network infrastructure access to copper and fibre loops at a fixed location	National	Telekom Slovenije	- access to copper loops and sub-loops, fibre loops (at ODF), in-house wiring, dark fibre, ducts and Ethernet-based transmission for backhaul for SLU, collocation; - transparency (incl. reference offer with KPI and SLA); - non discrimination; - accounting separation; - price control and cost accounting based on LRIC methodology: BU – for copper access and TD – for fibre access .
Spain	Wholesale network infrastructure accessto metallic loops at a fixed location (excl. fibre)	National	Telefónica	**Unbundled access (LLU & SLU) :** - cost orientation (multi-standard historic and current, transition to LRIC foreseen); - cost accounting and accounting separation; - transparency, incl. publication of a reference offer and information obligations regarding migration to NGA; - non-discrimination including monthly notification of QoS KPI. **Access to civil passive infrastructure (ducts, and other passive infrastructure in the public or the private domain):** - cost orientation (multi-standard historic and current, transition to LRIC foreseen; - cost accounting and accounting separation; - non-discrimination, including quarterly notification of QoS KPIs; - transparency, including publication of a reference offer and information obligations.
Sweden	Wholesale network infrastructure access to copper and fibre loops	National	TeliaSonera	- wholesale access to copper network, incl. full LLU, shared LLU and SLU; - access to dark fibre in access network, incl. unbundled access to fibre loops and connections between distribution points in terminating and feeder segments; - access to backhaul based on dark fiber, collocation, and related facilities, incl. information and support systems; - notification 5 years in advance phasing out of MDFs and to enable the affected affected ANOs to collocate and continue service provision at new locations; - migration between wholesale infrastructures, bitstream access products and forms of backhaul; - non-discrimination (internal and external); - transparency, including reference offer (internal and external), SLA and KPI; - cost orientation based on LRIC; - accounting separation.
Switzerland				

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UK	Wholesale network infrastructure access to copper, cable and fibre loops at a fixed location, for both business and residential customers (excl. mobile, fixed wireless and satellite, includes non-physical access remedy)	UK excl. Hull Area	BT	- network access on reasonable request: **LLU access**, LRIC+ and FDC, with price cap; **SLU and access to ducts and poles**, LRIC+ with appropriate risk premium; **Virtual Unbundled Local Access** (non-physical access remedy where BT has deployed FTTC or FTTH: Ethernet-based product for voice, data and video services, prices to be on fair and reasonable terms); and **Physical Infrastructure Access** (duct and pole access but remedy only available where access is used to deploy broadband networks serving multiple customers); - regulated process for dealing with requests for new products (SOR process); - non-discrimination; - cost orientation (not for VULA) and price control (for LLU only - details currently under consultation); - publication of a reference offer and notification of charges (90days for existing products, 28days for new ones); - notification of technical information (90 days); - publication of quality of service information; - cost accounting and accounting separation.