

## ELISA SAUNALAHTI SUBSCRIPTIONS 14.12.2017

### SERVICE DESCRIPTION FOR FIXED BROADBAND SERVICES, AGREEMENTS ENTERED BEFORE 15 MARCH 2017

Elisa's fixed broadband services offer a data transfer connection in accordance with a selected subscription type for a fixed monthly charge. The service includes a broadband subscription with a selected connection speed for five users, five email inboxes (200 MB per inbox) and homepage space (100 MB).

A device with a broadband connection will be provided with a public IP address (no IPv6 support) for a fixed term. Up to five IP addresses can be used simultaneously in a broadband subscription. The service is planned and designed for domestic use. Elisa does not guarantee the complete flawlessness of the service if the service is used other purpose than domestic use. If the service is mainly used for purposes other than domestic use, the customer is not entitled to consumer protection. In this case, Elisa's valid terms and conditions for corporate services shall apply. The number of email messages sent via Elisa's mail server within a short period of time has been limited.

The broadband subscription is connected to the flat via the internal network of the premises. Customers connect to the network from an antenna socket, telephone socket or other access point. If the telephone network is used, a filter is needed to prevent disruptions when the broadband service and telephone are used at the same time. The customer is responsible for the internal network of the property or flat. If Elisa employees have to make modifications to the internal network of the property or flat, Elisa has the right to charge a fee according to the valid price list.

#### Connection speed and technical requirements for terminal devices

The connection speed of the subscription varies according to connection speed categories. Connection speed is described using minimum, normal and maximum speeds. The normal speed is approximately 90 per cent of the maximum speed of the connection, i.e. the actual speed is 90 per cent of the maximum in a four-hour period. The actual **connection speed can be higher than the stated maximum speed.**

The actual connection speed depends, among other things, on the selected service, the internal network of the premises, disturbance levels, the terminal device characteristics and the network load. The connection speed may also be affected by a high usage volume of Internet services, the performance of equipment allocated to the service, loads caused by virus protection and firewall services and other software, or the use of a wireless local area network connection.

#### Connection speeds (Mbit/s) and technical requirements for terminal devices of Elisa Saunalahti broadband subscriptions

ADSL	Downstream speed			Upstream speed		
	Maximum	Normal	Minimum	Maximum	Normal	Minimum
1/0.5M	0.5	0.45	0.35	0.5	0.45	0.35
4/0.8M	2	1.8	1.4	0.8	0.7	0.5
10/0.8M	8	7	5.6	0.8	0.7	0.5
20/0.8M	16	14	11	0.8	0.7	0.5

An LLC frame of bridging protocols according to the IETF RFC 2684 standard and ADSL2+ line rates specified in G992.5 ANNEX A/M.

Cable modem	Downstream speed			Upstream speed		
	Maximum	Normal	Minimum	Maximum	Normal	Minimum
2/2M	1.6	1.4	1.1	1.6	1.4	1.1
10/10M	8	7	5	8	7	5
50/10M	45	40	30	8	7	5

<b>100/10M</b>	75	68	50	8	7	5
<b>200/10M</b>	150	135	100	8	7	5
EuroDOCSIS 3.0 standard, support for at least eight (8) downstream and four (4) upstream channels. The MAC address, manufacturer and model of the device must be given to Elisa (if the supplier is other than Elisa).						

<b>VDSL2</b>	<b>Downstream speed</b>			<b>Upstream speed</b>		
	<b>Maximum</b>	<b>Normal</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Normal</b>	<b>Minimum</b>
<b>2/2M</b>	1	0.9	0.7	1	0.9	0.7
<b>10/5M</b>	8	7	5	4	3.6	2.8
<b>10/10M</b>	8	7	5	8	7	5
<b>30/5M</b>	27	24	19	4	3.6	2.8
<b>50/10M</b>	45	40	30	8	7	5
<b>100/10M</b>	75	68	50	8	7	5
ITU-T G.993.2 VDSL2 profile 17a, VDSL band plan 998, SRA (seamless rate adaptation), INP (up to a value of two (2)), ITU G.998.4 G.inp data packet retransmission, PTM mode, UPBO (uplink power back-off) and DPBO (downlink power back-off).						

<b>Ethernet</b>	<b>Downstream speed</b>			<b>Upstream speed</b>		
	<b>Maximum</b>	<b>Normal</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Normal</b>	<b>Minimum</b>
<b>2/2M</b>	2	2	1.4	2	2	1.4
<b>10/10M</b>	10	9	7	10	9	7
<b>50/10M</b>	50	45	35	10	9	7
<b>100/10M</b>	90	81	63	10	9	7
<b>100/100M</b>	90	81	63	90	81	63
<b>250/50M</b>	250	225	175	50	45	35
<b>1000/100M</b>	1000	900	500	100	90	70
IEEE802.3 - 2015, 10/100/1000Base-T autonegotiation						

If necessary, Elisa can update the software and settings of a terminal device connected to the network, as well as gather measurements that are used to develop the quality of the service. Elisa has the right to manage the terminal device connected to the network in order to ensure service availability. Elisa will do its best to give notice in advance of management activities carried out on terminal devices which affect customers' services. For instance, software updates and restarts can be regarded as management of terminal devices. The safe use of the service requires using a virus protection and firewall software, and taking care of information security and updates of the hardware and software used.