

A ICT Infrastructure

This chapter examines trends in the available **telecommunication and internet infrastructure** measured mainly by number of telephone and broadband subscriptions. Data used in this chapter are collected from the telecommunication or Internet service providers (supply side) and should be distinguished from data based on ICT users' surveys (demand side).

Reference period: end of the year, unless otherwise stated.

The information in this section applies to services provided at the retail level only, **from services to end users**.

Definitions:

- **Fixed telephone subscription** refers to individuals or legal entity connected to the public switched telephone network (PSTN) including usage of IP telephone (VoIP technology). Number of fixed telephone subscriptions is measured as a number of active **fixed telephone lines (PSTN lines) and VoIP fixed line subscriptions (VoIP lines)**.
- **Mobile telephone subscription** refers to individual or legal entity connected to a public mobile telephone service that provides access to the PSTN using cellular technology and offering voice communication. Number of mobile telephone subscriptions is measured as a number of **SIM cards**. Both **post-paid** and active **prepaid** SIM cards that have been used during the last three months are included. *Note: As one person may use more than one active SIM card, the number of mobile phones can exceeds the number of individuals in total.*
- **The telephone traffic** originated in fixed or mobile telephone networks is measured by means of the number of actually called minutes (real minutes of calling) during the reference year, not the invoiced ones.
- **Broadband internet subscription** includes both **fixed (wired and wireless)** and **mobile access** to the Internet with nominal speed 256 or more Kbit/s, in one or both directions. It includes both residential subscriptions and subscriptions for organizations.
- **Fixed wired broadband** includes one of these "wired" technologies: DSL (Digital Subscriber Line); Cable modem (CaTV) and Fiber (FTTx).
- **Fixed wireless access (FWA)** is the terrestrial internet connection by means of a radio system including non-licensed frequency (**Wi-Fi**). It is characteristic by placing of the end point device on a fixed location (house, apartment) - the so-called WLL (Wireless Local Loop). *It is included only if this service is used as the transport mechanism of the Internet service provider (ISP).*
- **Mobile broadband** is internet access on third generation technologies (3G) and higher (4G/LTE). Mobile broadband subscriptions refers to:
 - **Standard mobile subscription** via SIM cards are typical voice subscriptions which also provide access to the Internet but are not purchased separately. It covers only actual subscribers - users must have accessed the Internet in the last three months.
 - **Dedicated data subscription** offered separately from voice services, either as an **add-on data package** to voice service **via SIM cards** or a **stand-alone service** using USB data **cards/modems/keys** integrated usually into portable computers or tablets.
- **Domain (Internet domain/domain name)** is a unique identifier of a computer or computer network connected to the Internet. The domain is registered by the registration authority (Top Level Domain).

Statistical information from the **Czech Telecommunication Office** (<http://www.ctu.eu>) has been used as main data source for the Czech Rep.

Data for **registered domains** has been obtained from www.nic.cz.

International comparison data has been taken from **ITU and EC database**.

For further information on ICT infrastructure see:

https://www.czso.cz/csu/czso/telekomunikacni_a_internetova_infrastruktura

A ICT infrastructure

Tab. A1 Fixed telephone network in the Czech Republic

	2013	2014	2015
Fixed-telephone subscriptions, total	2 005	1 875	1 893
Voice subscriptions to PSTN lines	1 245	1 149	993
Residential lines/stations	596	589	522
Business lines/stations	596	433	471
VoIP technology subscriptions	747	853	900
Individuals (citizens) as subscribers	383	344	307
Legal entities (e.g. enterprises) as subscribers	364	509	593

thous.

PSTN lines - Public Switched Telephone Network (formerly called main telephone stations); VoIP - Voice over Internet Protocol

Figure A1 Fixed-telephone subscriptions to PSTN lines

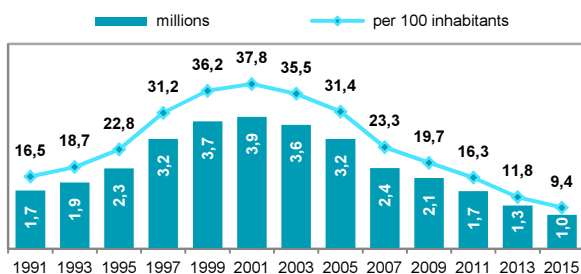


Figure A2 Type of subscribers using PSTN lines (mil.; %)

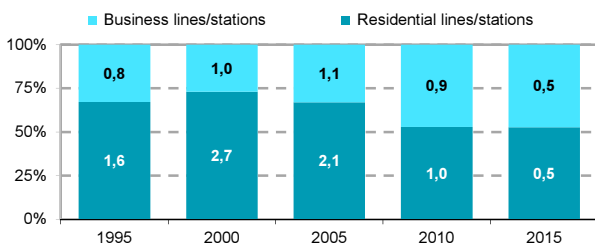
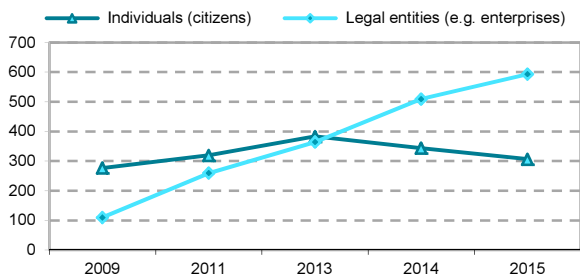


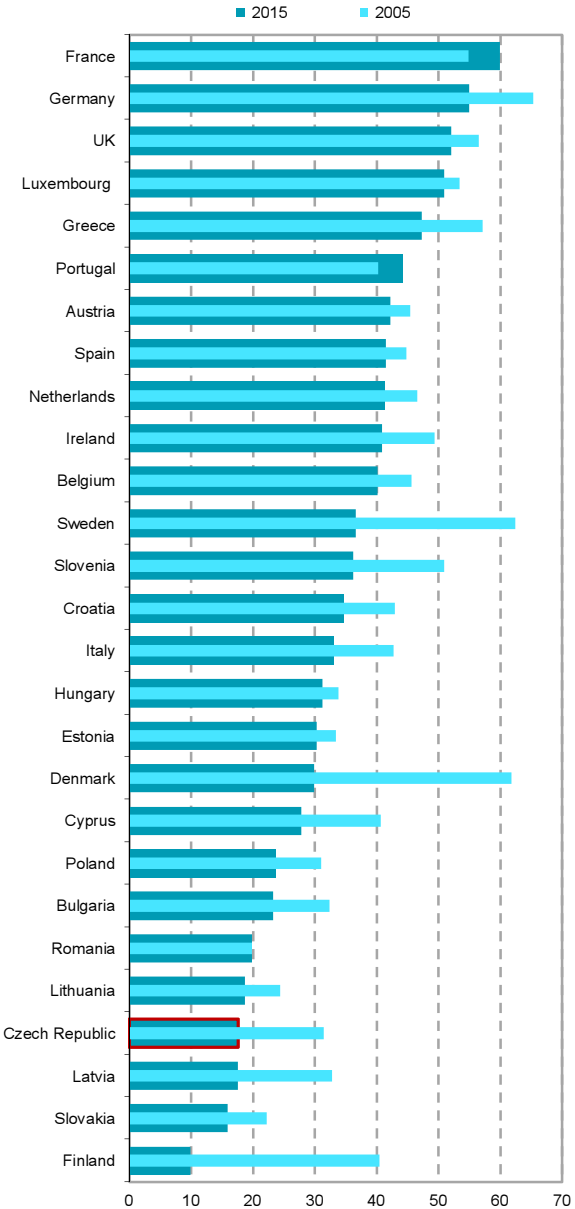
Figure A3 Type of subscribers using VoIP (thous.)



Source: Czech Telecommunication Office, 2016

A ICT infrastructure

Figure A4 Fixed-telephone subscriptions per 100 inhabitants in EU countries



* both using traditional PSTN lines and VoIP technology

Source: International Telecommunication Union, 2016

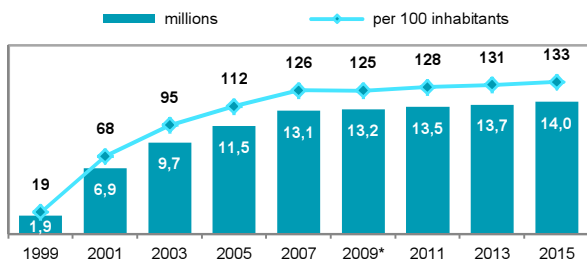
A ICT infrastructure

Tab. A2 Mobile telephone network in the Czech Republic

	2013	2014	2015
Mobile telephone subscriptions*, total	13 719	13 914	14 017
Pre-paid subscriptions (SIM cards)	5 195	5 055	4 893
Post-paid (tariff) subscriptions (SIM cards)	8 524	8 859	9 124
Subscriptions type			
Individuals (citizens) as subscribers	.	.	9 222
Legal entities (e.g. enterprises) as subscribers	.	.	4 795

* measured by the number of SIM cards that have been used for at least once in the last three months. The indicator applies to all mobile-cellular subscriptions that offer voice communications. It excludes subscriptions via data cards or USB modems, subscriptions to public mobile data services and M2M services.

Figure A5 Mobile telephone subscriptions



* change in methodology since 2009

Figure A6 Mobile telephone subscriptions by type of used SIM cards (mil.; %)

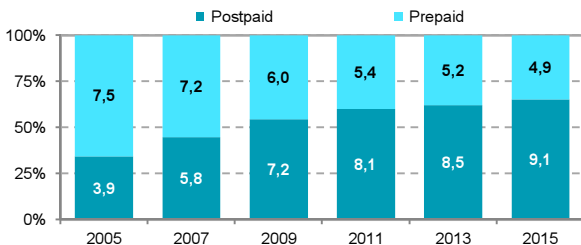
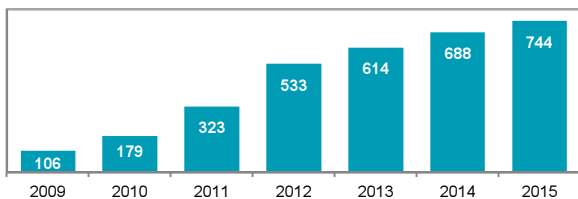


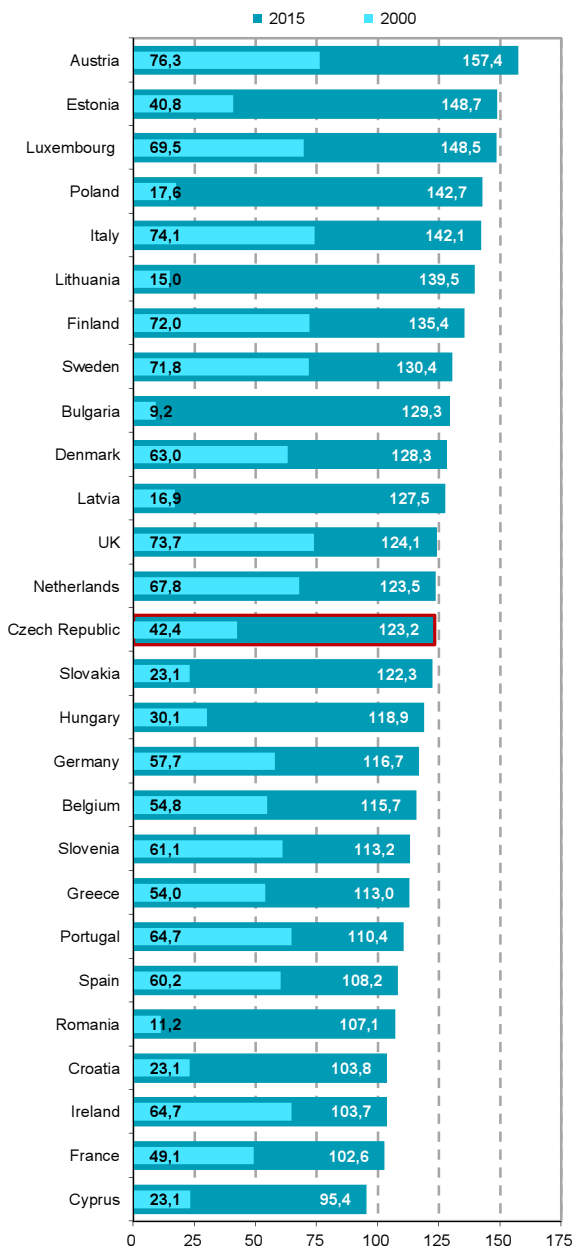
Figure A7 M2M mobile-network subscriptions** (thous.)



** M2M (Machine-to-machine) SIM cards designed exclusively for wireless communication between machines, devices and IS without human intervention.

A ICT infrastructure

Figure A8 Mobile telephone subscriptions per 100 inhabitants in EU countries



Source: International Telecommunication Union, 2016

A ICT infrastructure

Tab. A3 Fixed telephone traffic in the Czech Republic

	mil. outgoing called minutes		
	2013	2014	2015
Total voice calls*	2 141	2 061	1 687
Domestic voice calls, total	1 850	1 754	1 421
Fixed-to-fixed telephone traffic	1 411	1 274	1 006
Fixed-to-mobile telephone traffic	439	480	415
International voice calls	132	153	110
Other voice calls	159	155	156

* Includes all outgoing voice traffic from public fixed telephone network.

Figure A9 Total telephone traffic (mil. called minutes)

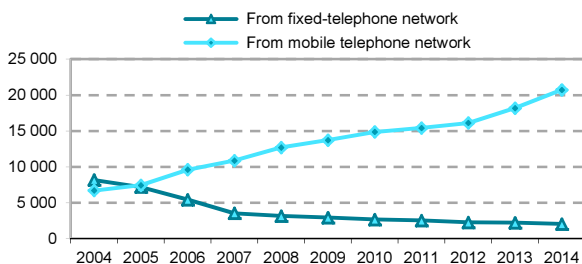


Figure A10 Domestic fixed-telephone traffic by type of calls

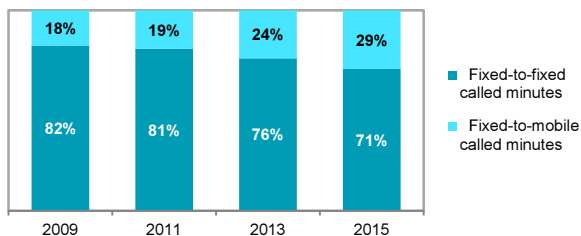
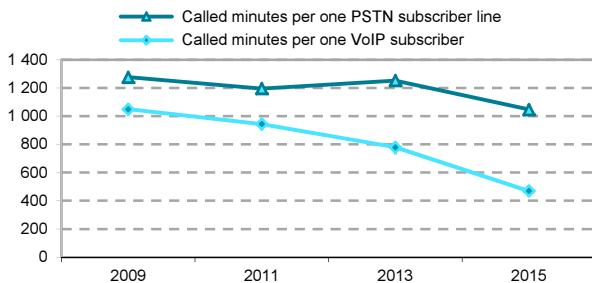


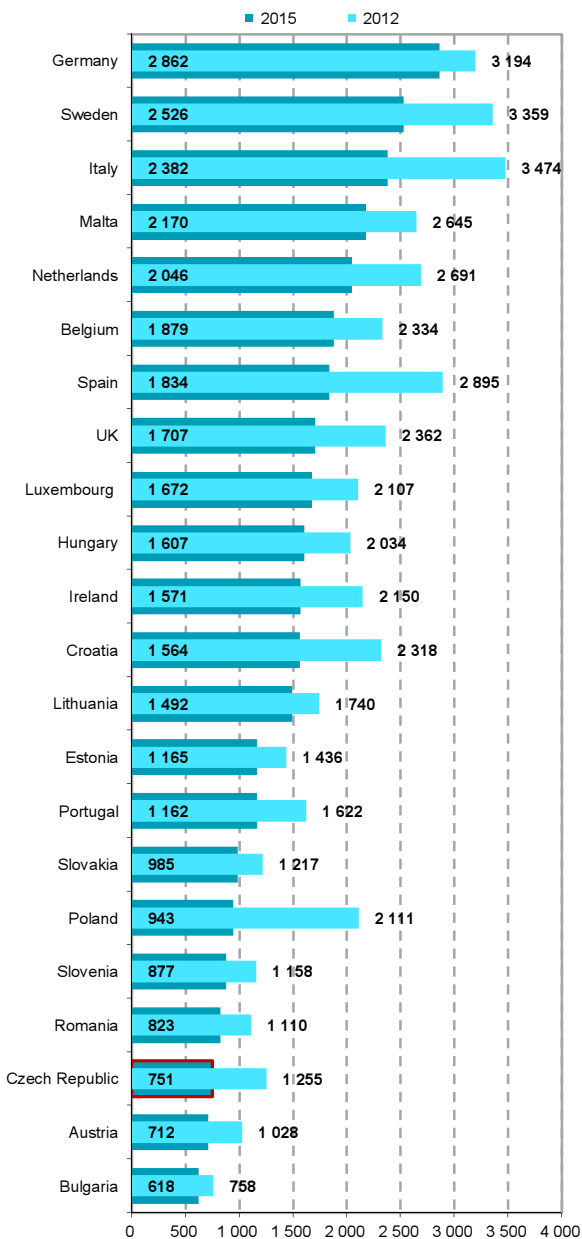
Figure A11 Domestic fixed-telephone traffic by type of technology (outgoing call minutes per 1 subscription)



Source: Czech Telecommunication Office, 2016

A ICT infrastructure

Figure A12 Domestic fixed-telephone traffic in EU countries (outgoing called minutes per one subscription)



Source: International Telecommunication Union, 2016

A ICT infrastructure

Tab. A4 Mobile telephone traffic in the Czech Republic

	mil. outgoing called minutes		
	2013	2014	2015
Total voice calls*	18 188	20 731	20 634
Domestic voice calls, total	17 716	20 197	20 176
Mobile-to-mobile telephone traffic (to the same mobile carrier)	11 255	12 082	11 660
Mobile-to-mobile telephone traffic (to the different mobile carrier)	5 705	7 273	7 694
Mobile-to-fixed telephone traffic	756	842	822
International voice calls	472	534	459
Subscriptions type			
Calls from individuals as subscribers	.	.	11 550
Calls from legal entities as subscribers	.	.	9 084

* Includes all outgoing voice traffic from mobile telephone network.

Figure A13 Mobile telephone traffic (outgoing called minutes)

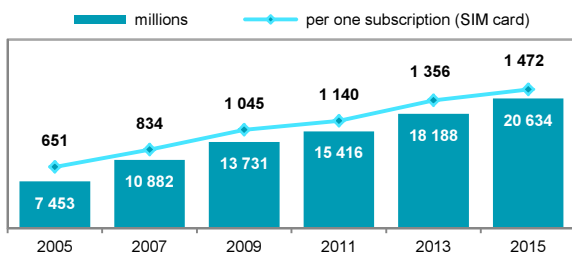


Figure A14 Domestic outgoing calls from mobile network

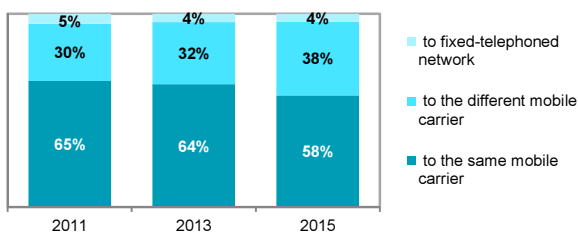
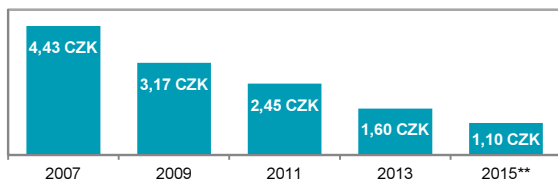


Figure A15 The average retail price for one outgoing called minute in the mobile network in the Czech Republic

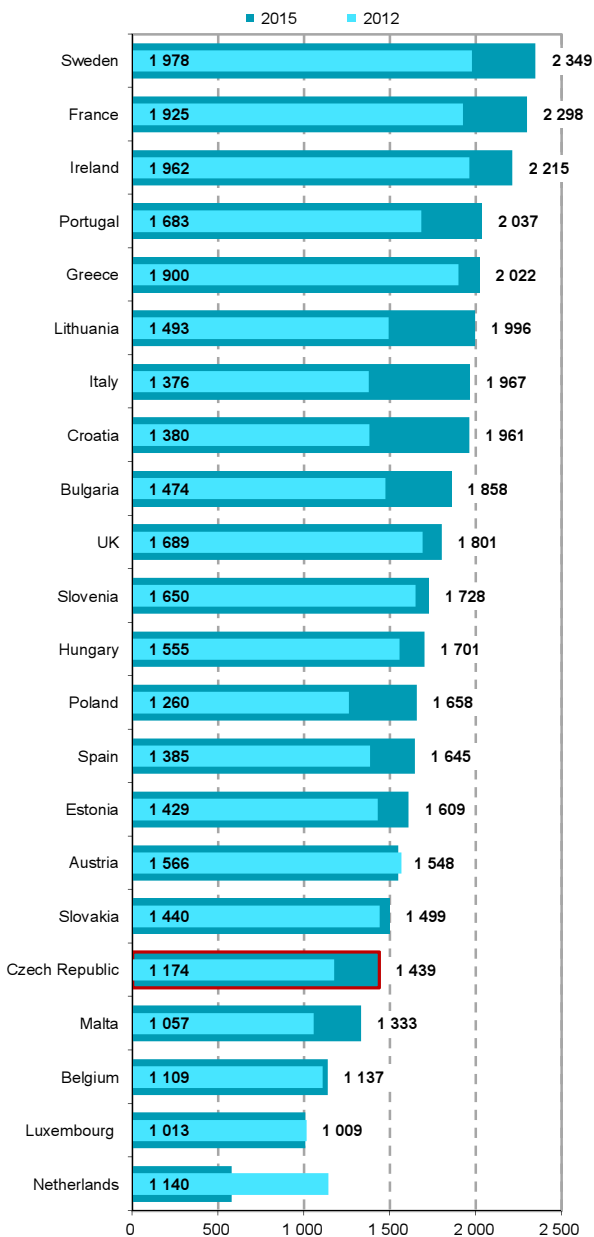


** figure for the first half of 2015

Source: Czech Telecommunication Office, 2016

A ICT infrastructure

Figure A16 Domestic mobile telephone traffic in EU countries (outgoing called minutes per one subscription)



Source: International Telecommunication Union, 2016

A ICT infrastructure

Tab. A5 Fixed broadband network in the Czech Republic

	thous.		
	2013	2014	2015
Fixed-broadband subscriptions, total*	2 811	2 943	2 946
by technology			
Fixed wireless access (FWA) using WiFi**	990	1 060	988
xDSL, total	953	953	943
ADSL	591	554	459
VSDL	362	398	485
Cable modem	518	527	541
Fibre (FTTx)	350	404	473
Subscriptions type			
Residential subscriptions (individuals)	.	.	2 487
Subscriptions for organizations (e.g. enterprises)	.	.	459

* Fixed-broadband subscriptions refers to fixed subscriptions to high-speed access to the public Internet, at downstream speeds equal to, or greater than 256 kbit/s. This includes cable modem, DSL, fibre-to-the-home/building, other fixed (wired)-broadband subscriptions, satellite broadband and terrestrial fixed wireless broadband (Wifi). Number of subscriptions is measured by number of access points using one of the above listed technologies for fixed broadband internet connection.

** Fixed wireless access (FWA) is the terrestrial internet connection by means of a radio system including non-licensed frequency (Wi-Fi). It is characteristic by placing of the end point device on a fixed location (house, apartment) - the so-called WLL (Wireless Local Loop). It is included only if this service is used as the transport mechanism of the Internet service provider (ISP).

Figure A17 Fixed broadband Internet subscriptions

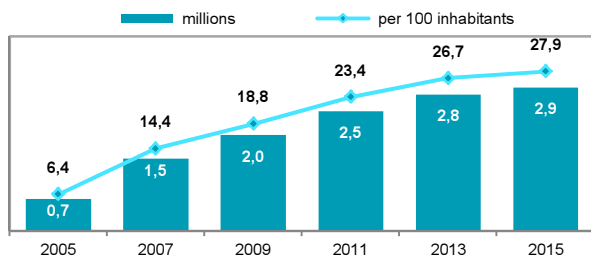
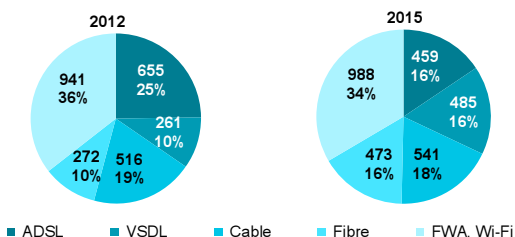
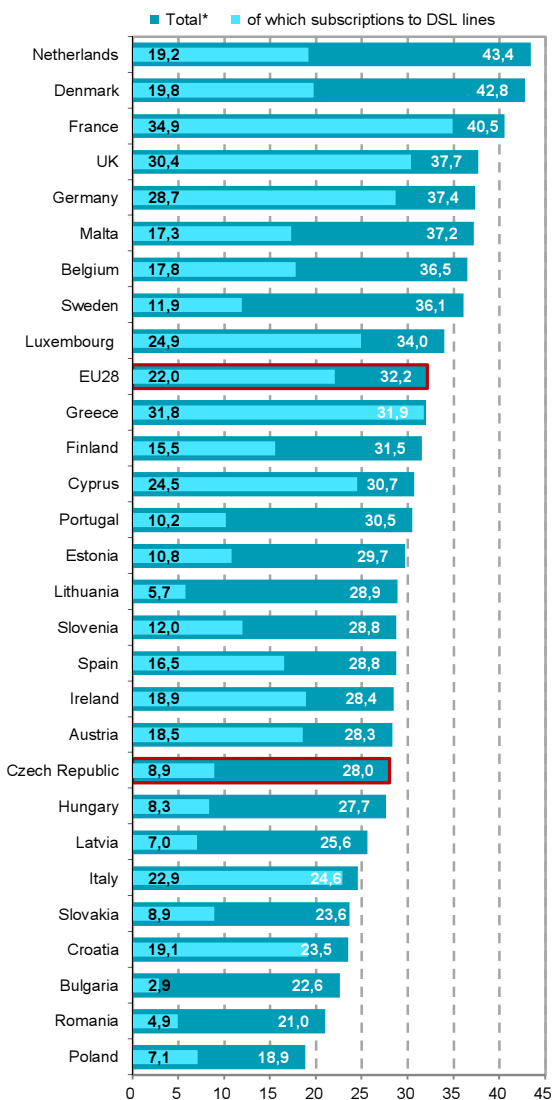


Figure A18 Fixed broadband Internet subscriptions by technology (mil.; %)



A ICT infrastructure

Figure A19 Fixed broadband Internet subscriptions* per 100 inhabitants in EU countries; 2015



* Also includes Fixed wireless access (FWA) that is the terrestrial internet connection by means of a radio system including non-licensed frequency (Wi-Fi). It is characteristic by placing of the end point device on a fixed location (house, apartment) - the so-called WLL (Wireless Local Loop). It is included only if this service is used as the transport mechanism of the Internet service provider (ISP).

A ICT infrastructure

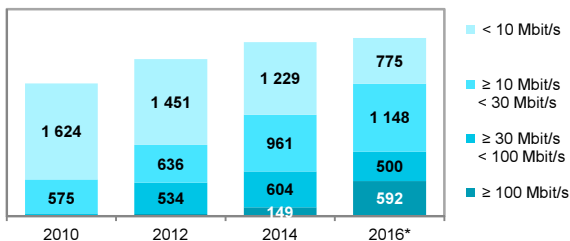
Tab. A6 Internet network speed in the Czech Rep.; 2015

thous. of Internet subscriptions with advertised maximum download speed

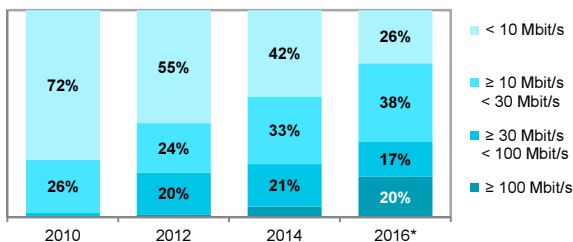
	< 10 Mbit/s	≥ 10 Mbit/s < 30 Mbit/s	≥ 30 Mbit/s
Subscriptions, total	843	1 093	1 009
by technology			
FWA using Wi-Fi	363	445	180
xDSL	450	426	68
Cable modem	13	89	440
Fibre (FTTx)	18	133	181

Figure A20 Fixed broadband internet by speed

a) Subscriptions with advertised maximum download speed (thous.)

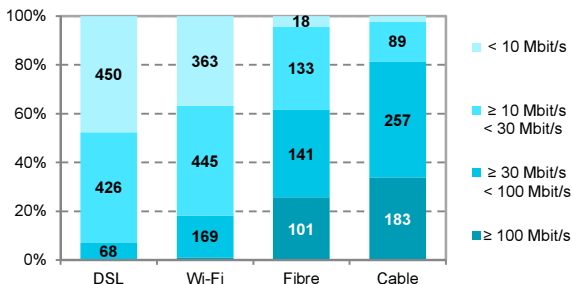


b) Subscriptions with advertised maximum download speed (%)



* as at 30 June 2016

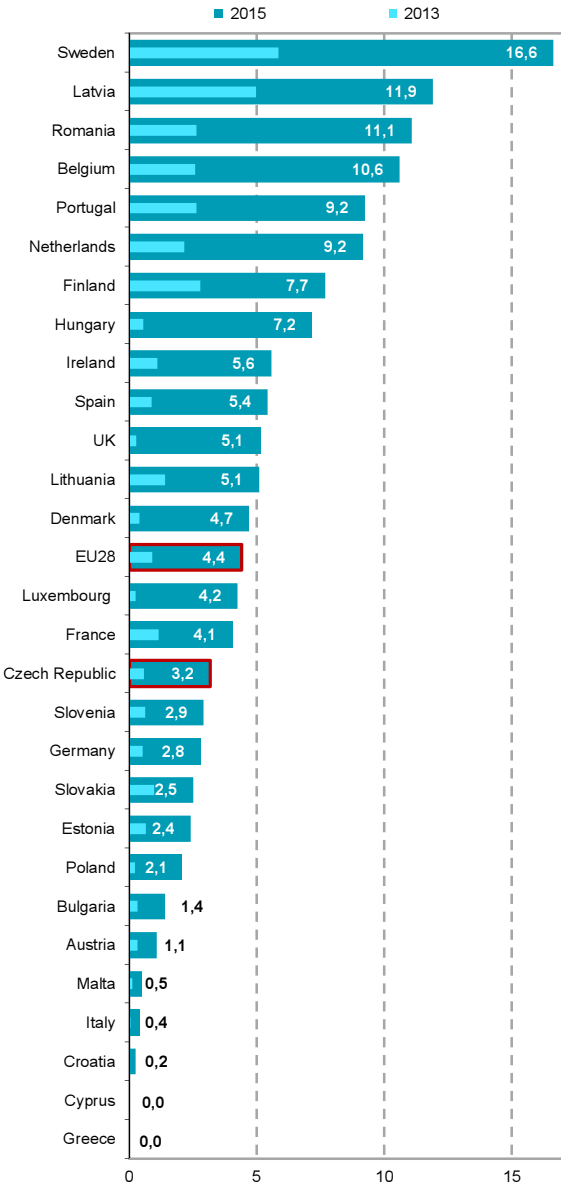
Figure A21 Technology used for fixed broadband Internet connection by speed (thous. of subscriptions; %); 2015



Source: Czech Telecommunication Office, 2016

A ICT infrastructure

Figure A22 Fixed broadband subscriptions with advertised maximum download speed 100 Mbit/s and more per 100 inhabitants in EU countries



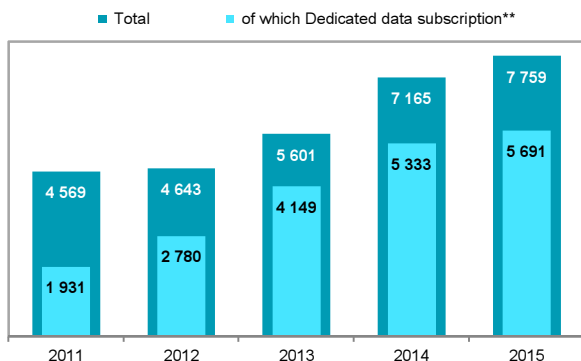
A ICT infrastructure

Tab. A7 Mobile broadband network in the Czech Republic

	2013	2014	2015
	thous.		
Mobile-broadband subscriptions, total*	5 601	7 165	7 759
Standard mobile subscription	1 452	1 832	2 068
Dedicated data subscription**	4 149	5 333	5 691
Average data consumption per 1 active SIM card (MB)			
All active SIM cards	118	172	323
SIM cards using data services	270	342	598

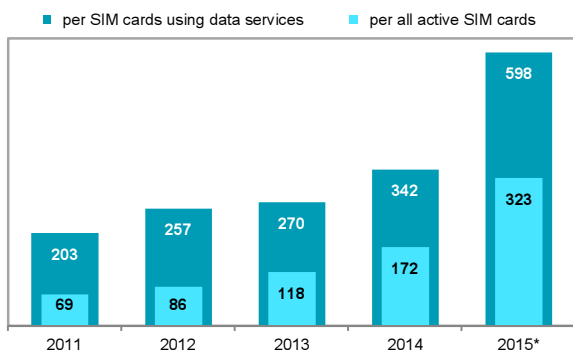
* It refers to the sum of active handset-based and computer-based (USB/dongles) mobile-broadband subscriptions to the public Internet. It covers actual subscribers (not potential subscribers), users must have accessed the Internet in the last three months.

Figure A23 Mobile broadband subscriptions (thous.)



** SIM cards with data plans and data packs

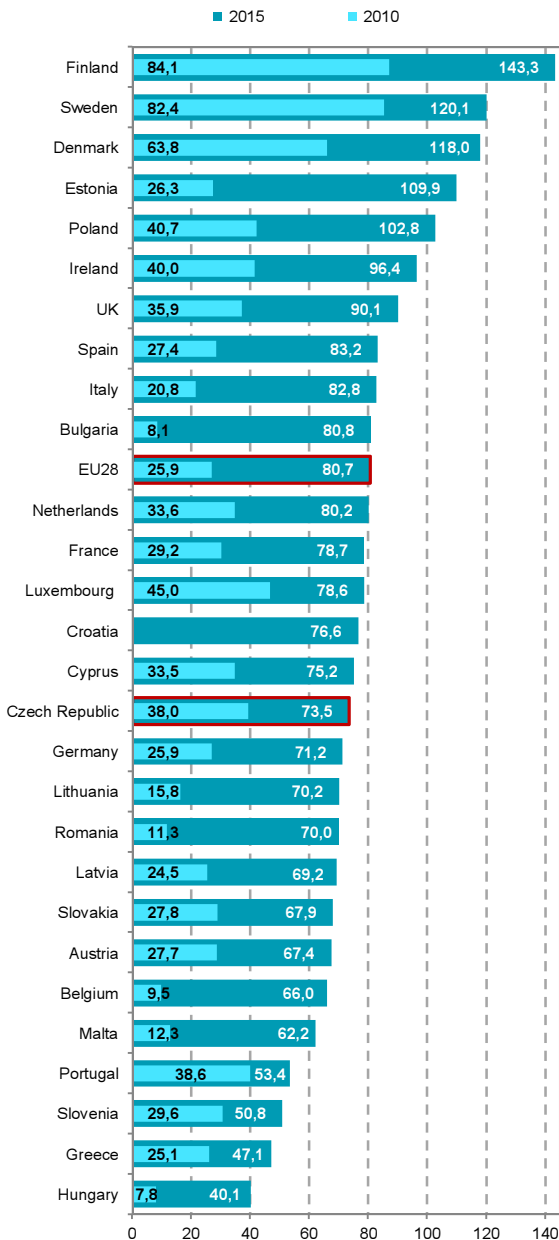
Figure A24 Volume of transmitted data per one active SIM card (in MB)



* Czech Telecommunication Office estimate

A ICT infrastructure

Figure A25 Mobile broadband subscriptions per 100 inhabitants in EU countries



Source: European Commission, 2016

A ICT infrastructure

Tab. A8 Top-level domains in (.cz) zone

	2014	2015	2016
Total	1 173	1 230	1 281
DNSSEC signed	453	477	664
by IP protocol			
IPv4 domains	884	895	891
IPv4+IPv6; IPv6 domains	269	314	369

DNSSEC is a security extension of common Domain Name System. See: http://en.wikipedia.org/wiki/Domain_Name_System_Security_Extensions
Internet protocol version 4 (IPv4) and **Internet protocol version 6 (IPv6)**:
<http://en.wikipedia.org/wiki/IPv4> and <http://en.wikipedia.org/wiki/IPv6>

Figure A26 Top-level domains in (.cz) zone

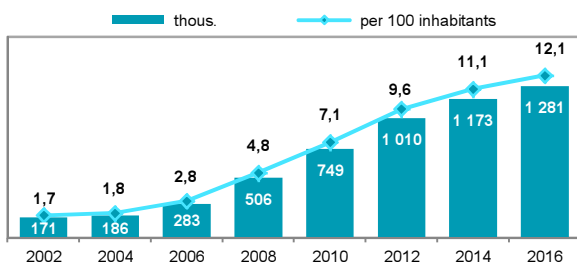


Figure A27 Top-level (.cz) domain registration and cancellation (thousand)

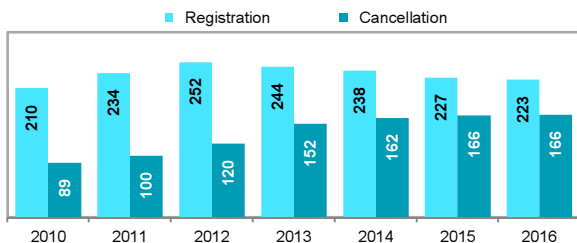
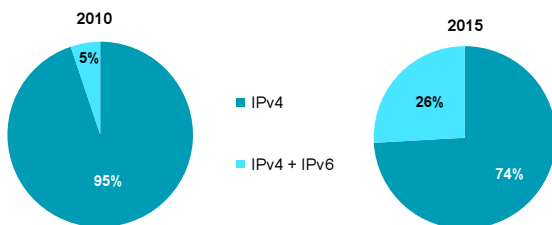
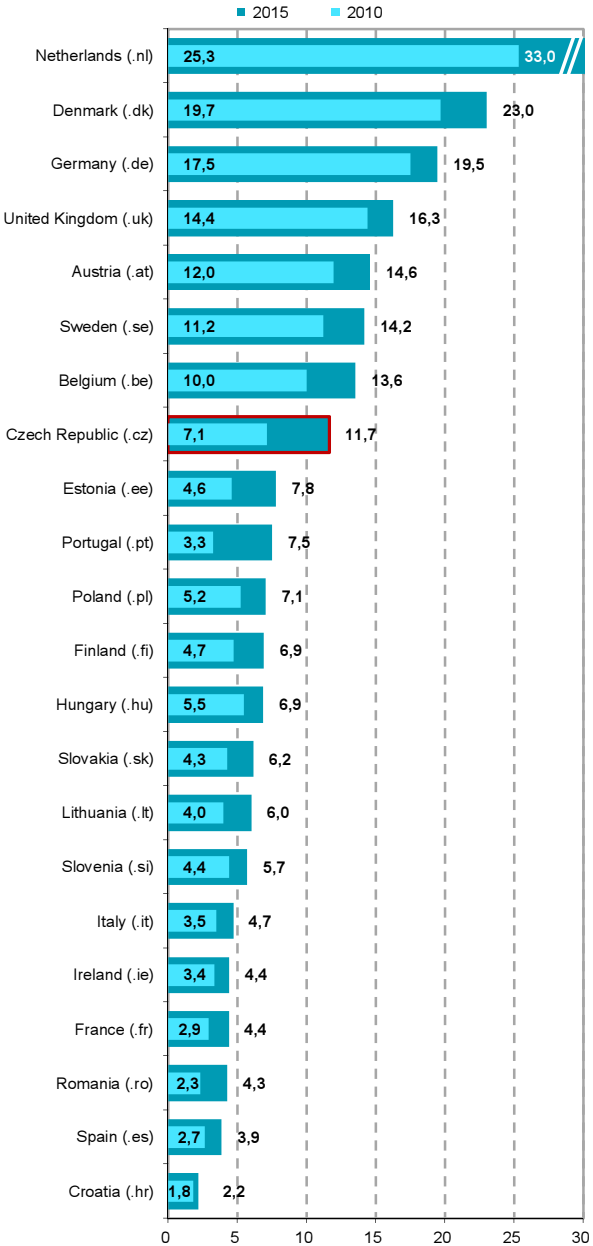


Figure A28 Top-level (.cz) domain by IP protocol



A ICT infrastructure

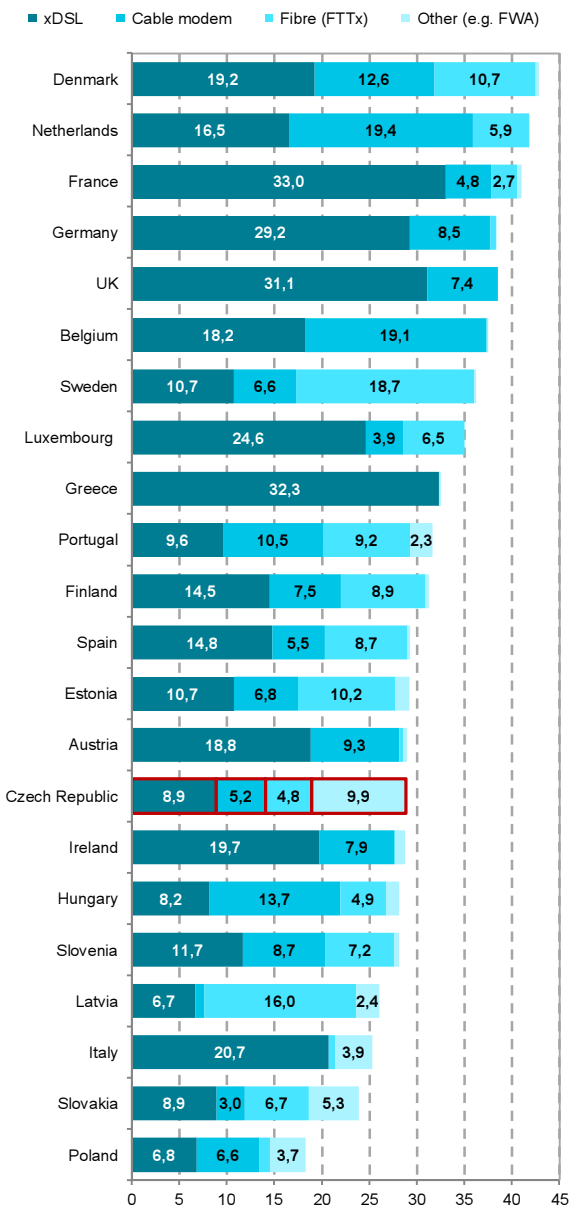
Figure A29 Country top-level domains (ccTLD) per 100 inhabitants in EU countries



Source: CENTR.org and national administrators of ccTLD, 2015

A ICT infrastructure

Figure A30 Fixed-broadband subscriptions per 100 inhabitants in EU countries by technology; June 2016



Source: OECD, 2017