

Table 2.10. Quality of service

	<b>Fixed and mobile voice services: does the government publish or require operators to publish data on QoS?</b>	<b>Broadband: does the government publish or require operators to publish data on QoS?</b>	<b>Broadband: is there a government-endorsed site where users can test the speeds and characteristics of their broadband connections?</b>
<b>Australia</b>	<p>All service providers are required to provide services in accordance with technical standards and codes developed by industry bodies and regulators, and consumers are able to complain about breaches of the rules. There is no detailed reporting against these standards and codes. However, Australia's regulatory body for telecommunications consumer issues, the ACMA publishes regular QoS reports, including:</p> <ul style="list-style-type: none"> <li>on an annual basis, the <i>Telecommunications Performance Bulletin</i>, which provides information on telecommunications performance data over the financial year. It covers the major service providers with regard to the Customer Service Guarantee (CSG), Priority Assistance, the Network Reliability Framework (NRF) and payphones.</li> <li>on an annual basis, the <i>Communications Report</i>, which reports on the performance of carriers and carriage service providers with particular reference to consumer satisfaction, consumer benefits and quality of service. In addition, it discusses issues such as the efficiency and quality of the telecommunications industry's supply of carriage services, the CSG, NRF and telecommunications industry performance in meeting industry codes and standards.</li> <li>The ACCC reports annually on competition in the telecommunications market and price movements in voice and Internet services.</li> </ul> <p>From 1 July 2012, the new agency, TUSMA, will be required to report to the Minister on the performance of contractors and grant recipients in their delivery of various universal service and public interest telecommunications services. This report will be published as part of TUSMA's annual report for each financial year.</p>	<p>The ACMA (in accordance with section 105 of the Telecommunications Act) must monitor and report each year to the Minister on significant matters relating to the performance of carriers and carriage service providers.</p> <p>This activity includes the monitoring of and reporting on consumer satisfaction, consumer benefits and quality of service. This includes data on Internet penetration, technology usage and performance.</p>	No
<b>Austria</b>	No	No	Not yet. However, it is currently under construction (by RTR, the regulatory authority) and is likely to be available by the end of this 2012.
<b>Belgium</b>	Operators are required to publish data on the QoS of fixed telephony services and Internet telephony.	Operators are required to publish data on the QoS of fixed Internet access. They will be required to provide information regarding actual throughput.	No. However, discussions are taking place regarding this possibility.
<b>Canada</b>	Fixed: incumbent operators are required to meet public QoS standards in areas where they remain regulated. Mobile: No	No	No
<b>Chile</b>	Yes. The regulator publishes mobile service QoS, though not fixed service QoS.	Yes. According to the net neutrality law, ISPs have an obligation to publish the technical indicators of the Internet Access service, such as average speed, latency and resale rate, among others.	No. However, the regulator is working on a platform to measure quality indicators directly from the ISP networks.

<b>Czech Republic</b>	In accordance with the Electronic Communications Act, each provider of publicly available telephone service is obliged to publish a description of the publicly available telephone service as well as its guaranteed level of quality.	No. In accordance with the Electronic Communications Act, the NRA is entitled to require a provider (publicly available electronic communication services) to publish certain information (overview of current prices, quality and conditions of provision of publicly available services).	No, but a website is being prepared and is under trial operation at present.
<b>Denmark</b>	No	No	Yes: <a href="http://www.erhvervsstyrelsen.dk/bredbaandsmaaleren">www.erhvervsstyrelsen.dk/bredbaandsmaaleren</a>
<b>Estonia</b>	At least the following statistics must be made publicly available: 1. Average supply time for initial connection (taking into account only 95% of the fastest times); 2. Number of end-user complaints about service quality per end-user; 3. Average service fault repair time (taking into account only 95% of the fastest times) Mobile telephone service over broadband is required to make a map of the coverage area publicly available.	At least the following statistics must be made publicly available: 1. Average supply time for initial connection (taking into account only 95% of the fastest times); 2. Number of end-user complaints about service quality per end-user; 3. Average service fault repair time (taking into account only 95% of the fastest times). Mobile telephone service over broadband is required to make a map of the coverage area publicly available. There are further data needs on broadband communications services, for example: 1) upload and download rates of data transmission provided to end-users; 2) allowed data communication protocols; 3) allowed data communication ports; 4) services using servers	Users can test speeds at the following website: <a href="http://www.nefitester.ee">www.nefitester.ee</a>
<b>Finland</b>	The Finnish Communications Regulatory Authority (FICORA) has obligated operators to publish the average response times of customer services.	FICORA has obligated operators to publish the average response times of customer services.	No
<b>France</b>	<b>Fixed service quality: quarterly surveys</b> Decision no. 2008-1362 (4 December 2008) of ARCEP instructed all operators providing fixed service to residential customers to measure QoS indicators as defined by ETSI. Since 30 June 2010, operators with more than 100 000 subscribers by type of telephone service (PSTN, ADSL, cable, etc.) are required to publish the results of these measurements quarterly on their website. These measurements are to be accompanied by a description of the indicators, a document describing the system of measurements implemented by the operator, and a certified report prepared by an independent entity for objectivity, fairness and compliance with the rules laid down by the Authority. The list of indicators divides into two categories: – Six key indicators relate to access to an operator's network: supply time for initial connection failure rates reported by online access, time to repair, response time by customer service, complaints about accuracy of billing rate and resolution of claims via calls to the customer service centre. – Three indicators are specific to the quality of telephone service: failure rates of calls, time to establish communication and quality of speech. <b>Fixed service quality: the universal service provider</b> In the context of designation of universal service operators, the Government has provided specifications for QoS requirements and transparency. Operators are required to publish their performance according to a number of QoS indicators, defined by ETSI. For telephone service, these indicators include: time to provide connections, time to repair a failure, and the failure rate of calls. They can be found at the France Telecom website: <a href="http://www.orange.com/fr/reseaux/documentation/documentation">www.orange.com/fr/reseaux/documentation/documentation</a> <b>Quality of mobile service, an annual survey</b> Concerning mobile services, ARCEP has conducted since 1997 an annual survey to assess the service quality of mobile networks in mainland France, as experienced daily by customers.	<b>Mobile services</b> ARCEP conducts an annual survey to assess the quality of service on mobile networks, providing indicators on access to the Internet for the main market operators (eg speed, availability, etc.). <b>Fixed internet access</b> ARCEP is working to set up a device to measure quality of service for access to fixed internet, which will include indicators such as bandwidth, technical measures (latency, packet loss) and as well as usage-oriented indicators (loading time, quality of streaming). Indicators will be measured for the main operators and will distinguish results according to the characteristics of the access networks (terminating copper, cable, fibre, etc.). Measurements will be published in 2013. A public consultation took place in 2012: <a href="http://www.arcep.fr/index.php?id=8571&amp;L=1&amp;tx_gsactualite_pi1http%3A%2F%2Fwww.arcep.fr%2F%3Fid=8571&amp;tx_gsactualite_pi1[uid]=1518&amp;tx_gsactualite_pi1[backID]=1&amp;cHash=967f3d803edd995c64c925e66c838a93">www.arcep.fr/index.php?id=8571&amp;L=1&amp;tx_gsactualite_pi1http%3A%2F%2Fwww.arcep.fr%2F%3Fid=8571&amp;tx_gsactualite_pi1[uid]=1518&amp;tx_gsactualite_pi1[backID]=1&amp;cHash=967f3d803edd995c64c925e66c838a93</a>	No. However, ARCEP is working on such a project as part of its work on quality of service of fixed Internet access: users will be able to perform tests to measure the characteristics of their connection.

<b>France (cont.)</b>	<p>Under their licenses 2G, 3G and 4G operators Orange, SFR, Bouygues and Free are obliged to perform measurements of their network to assess the quality of services offered.</p> <p>In addition, operators must always meet quality of service requirements in accordance with their license obligations. The measurements are performed in accordance with a methodology defined jointly by the operators and the Authority and made by one or more external service provider(s) selected by the Authority following a tender. Operators contribute financially to the implementation of the survey.</p> <p>The Authority shall publish annually, in a format defined by the Authority, the results of the survey. The survey is made annually and has two parts:</p> <ul style="list-style-type: none"> <li>– A survey to assess the quality of voice services;</li> <li>– A survey to assess the quality of data services (SMS, MMS, WAP, FTP and Video).</li> </ul> <p>The 2G and 3G networks are tested in different proportions for each operator (volume of voice and data communication in the quarter preceding the survey for each operator). The field measurements phase took place over a period of 3 to 4 months. This is preceded by a probationary phase to verify and validate protocols, devices and SIM cards used. In the last phase the operators analyse the measurements prior to final publication.</p>		
<b>Germany</b>	There is currently no such requirement nor publication.	There is currently no such requirement or publication.	Bundesnetzagentur is currently conducting a study on QoS for broadband Internet access (until December 2012). Among others, a survey on headline “up to” speeds of residential fixed Internet access is performed. End-users are asked to perform a browser-based speed test that measures the download and upload throughput ratio. The site is available at: <a href="http://www.initiative-netzqualitaet.de">www.initiative-netzqualitaet.de</a> .
<b>Greece</b>	<p>Yes (EETT Decision No. 621/011/27-9-2011 (OJ 2417/B/2011)).</p> <p>Data are available at: <a href="http://www.eett.gr/opencms/opencms/EETT/Electronic_Communications/Telecoms/QualityIndicators/">www.eett.gr/opencms/opencms/EETT/Electronic_Communications/Telecoms/QualityIndicators/</a> and on the website of each provider. Data for mobile services are not yet available.</p>	<p>Yes (EETT Decision No. 621/011/27-9-2011 (OJ 2417/B/2011)).</p> <p>Data are available at: <a href="http://www.eett.gr/opencms/opencms/EETT/Electronic_Communications/Telecoms/QualityIndicators/">www.eett.gr/opencms/opencms/EETT/Electronic_Communications/Telecoms/QualityIndicators/</a> and on the website of each provider. Data for mobile services are not yet available.</p>	<p>Yes. Prepared by EETT: <a href="http://broadbandtest.eett.gr/">http://broadbandtest.eett.gr/</a></p>
<b>Hungary</b>	Yes. All operators with more than 1 000 subscribers are required to publish data on the QoS parameters they have established on the network level, and on how they fulfil these parameters. Additionally, these operators are mandated to submit this data also to the NRA, which publishes them on its webpage.	Yes. All operators with more than 1 000 subscribers are required to publish data on the QoS parameters they have established on the network level, and on how they fulfil these parameters. Additionally, these operators are mandated to submit this data also to the NRA, which publishes them on its webpage.	No. However, there is a pilot project underway which aims to establish a framework for the measurement and collection of data pertaining to broadband upload and download speeds. This will include a webpage where subscribers can make measurements.
<b>Iceland</b>	No	No	No
<b>Ireland</b>	ComReg (as the independent communications regulator) publishes such data. Regulation 10 of the Universal Service Regulations requires the Universal Service Provider (currently the incumbent eircom) to publish information on its performance in relation to the provision of the USO. In exercise of ComReg's general powers to publish information under Regulation 17 of the Framework Regulations, ComReg simultaneously publishes the performance data with eircom on a quarterly basis	No	No
<b>Israel</b>	QoS parameters are set in operators' licenses.	No	No

<b>Italy</b>	<p>AGCOM defines requirements and conditions to measure and publish QoS KPI for both fixed and mobile voice services.</p> <p>AGCOM (see Resolutions nos 254/04/CSP and 154/12/CONS) defined a set of KPI to measure the quality of both fixed and mobile voice fixed telephony services.</p> <p>Such indicators are based on the European standard provided by ETSI. In particular, AGCOM defines measurement methods, provides information to consumers about the results of measurements, and establishes the obligation for operators to publish annual targets.</p> <p>Such information enables end-users to compare levels of quality achieved by different providers. AGCOM provisions also foresee a refund for end-users in cases of delay regarding delivery and maintenance (fault correction) for fixed services.</p>	<p>AGCOM establishes requirements and conditions to measure and publish QoS KPI about both fixed and mobile broadband services. Data can be consulted on both the AGCOM and operator websites. The regulatory activity regarding quality of service of Internet fixed access (resolution no. 244/08/CSP) focuses on wired access (mainly xDSL via copper cables, but also optical fibre) with headline speed up to 20 Mbit/s.</p> <p>With regard to quality of access to the Internet from mobile terminals, AGCOM approved (resolution no. 154/12/CONS) periodic campaigns of active measuring on-field, based on a drive test approach. The test targets are the 4 mobile networks currently active in Italy. Two campaigns per year are planned; each based on more than 1 000 test points spread over 20 cities (the largest for each of the 20 Italy administrative regions). The drive tests are nomadic and outdoor, and individual statistics for each network will be published.</p>	<p>Yes. AGCOM provided a specific tool available at: <a href="http://www.misurainternet.it">www.misurainternet.it</a>.</p> <p>Users can download a software agent called Nemesys to verify performance of their fixed line.</p> <p>If the outcome is lower than the advertised speed, users may submit a claim to the provider. If the provider does not improve quality within 30 days, the user may withdraw from the contract without penalties.</p> <p>A light version of Nemesys, named MisuraInternet Speed Test, requires only a few minutes to run. Although not suitable for a formal complaint, it can provide a quick check of network performance, and helps users to decide whether to download the full version.</p>
<b>Japan</b>	No	No	No
<b>Korea</b>	<p>Not applied to fixed-line telephony.</p> <p>In the case of mobile phones, the QoS of WCDMA calls, measured by success rates of voice calls, is evaluated and published on a website operated by the KCC (<a href="http://wiseuser.go.kr">wiseuser.go.kr</a>).</p>	<p>In the case of fixed broadband services, the quality of broadband services, measured by transmission speed with a maximum speed of 100 Mbps, is evaluated and published online (<a href="http://wiseuser.go.kr">wiseuser.go.kr</a>).</p> <p>In the case of mobile broadband services, the quality of LTE, 3G, Wi-Fi and WiBro services, measured by success rates of internet access and data transmission, and duration of web-surfing, is evaluated and published online (<a href="http://wiseuser.go.kr">wiseuser.go.kr</a>).</p>	<p>Transmission speed based on the hub can be tested at <a href="http://speed.nia.or.kr">speed.nia.or.kr</a>, operated by the National Information Society Agency (NIA).</p>
<b>Luxembourg</b>	No	No	No
<b>Mexico</b>	<p>Telmex has the obligation to publish the results of the previous year's quality indicators during the first quarter of each year. On 30 August 2011, Cofetel published the "Fundamental Technical Plan of Local Mobile Service Quality" in the Official Journal. It stipulated Cofetel's obligation to publish field measurement results within 30 days following the conclusion of each measurement exercise.</p> <p>For telephony service, the indicators are: proportion of unsuccessful call attempts, proportion of cut-off calls, call setup time and audio quality.</p>	<p>The "Fundamental Technical Plan of Local Mobile Service Quality" specifies the quality indicators for Internet access: proportion of failed FTP sessions, proportion of FTP sessions disrupted, FTP session set-up time and average download speed of FTP data.</p>	<p>On April 2011, Cofetel launched the site MiCofetel (<a href="http://www.micofetel.gob.mx/">www.micofetel.gob.mx/</a>), as an interactive website dedicated to QoS and consumer issues, where consumers can test the speeds of their broadband connection. The site is the result of a collaboration between PROFECO (Consumer Protection Agency) and Cofetel.</p>
<b>Netherlands</b>	No	No	
<b>Norway</b>	Yes. The response times for customer service are published by NPT.	N/A	"Nettfart" is run by the telecom regulator <a href="http://www.nettfart.no/">www.nettfart.no/</a>
<b>New Zealand</b>	No	The Commerce Commission has been publishing data on the quality of residential broadband plans.	No
<b>Poland</b>	Yes. According to Article 63.1 of the Act of 16 July 2004 (Telecommunications Law), "A provider of publicly available telecommunications services shall publish up-to-date information concerning the quality of these services."	Yes. According to Article 63.1 of the Act of 16 July 2004 (Telecommunications Law), "A provider of publicly available telecommunications services shall publish up-to-date information concerning the quality of these services."	No such site exists yet.

<b>Portugal</b>	<p><b>Fixed voice service</b></p> <p>ICP-ANACOM approved and published, on 28 August 2009, Regulation no. 372/2009 (amending Regulation no. 46/2005, of 14 June) applicable to services providing access to the public telephone network at a fixed location and the publicly available telephone service at a fixed location. (<a href="http://www.anacom.pt/render.jsp?contentId=983509">www.anacom.pt/render.jsp?contentId=983509</a>). This Regulation defines a set of parameters to be measured, by all fixed telephone service providers, their content, format and manner of information to be published, in order to ensure that the information disclosure to end-users, about quality of service, is clear, up-to-date and comparable. According to the referred regulation, all fixed telephone service providers shall publish and make available, at their headquarters and at all their establishments, quality of service indicators, containing their definition and measuring methods, as well as defined performance objectives and quality levels reached, where applicable. The referred information shall also be disclosed in the undertakings website, when it exists, in a clearly identifiable advertisement. Additionally and by decision of 21 April 2006, amended by the determination of 10 October 2011 (<a href="http://www.anacom.pt/render.jsp?contentId=1101389&amp;languageId=1">www.anacom.pt/render.jsp?contentId=1101389&amp;languageId=1</a>)</p> <p>ICP-ANACOM approved the "Object and form of public disclosure of the conditions of provision and use of electronic communication services."</p> <p>According to the referred decision:</p> <p>a) Information shall be provided on the levels of quality of service which the customer may expect to be provided by the service provider, on average, and on the minimum levels of quality of service, set out by law or regulation, which must be provided to each customer (for example, for telephone services, the deadline for implementing portability provided for in the respective Regulation), non-compliance with which determines the payment of compensation or refund. In the Annex of determination ICP-ANACOM recommended some parameters which companies may use.</p> <p>The provider must also indicate how users may obtain information on minimum levels of quality of the service to be provided.</p>	<p>Under the scope of the decision "Object and form of public disclosure of the conditions of provision and use of electronic communication services", in order to ensure that users are provided with the clearest information on access speeds, undertakings must guarantee:</p> <p>a) That interested parties are provided with clear and accurate information for the various service offers, distinguishing between upload and download speeds, the maximum access speed provided and the average access speed estimated by the provider (the speed which on average is estimated by the provider to be made available under normal usage conditions, which may frequently differ from the maximum access speed disclosed).</p> <p>b) The disclosure of levels of quality related to maximum and average access and browsing speeds must be supplemented, where appropriate, by a warning that the provided speed may not be ensured for each and every connection, as this depends on the level of use of the network and server which the customer connects to.</p> <p>c) The provision to interested parties of clear and accurate information on migration between offers, specifically to meet a customer request to change its maximum speed.</p>	No
<b>Slovak Republic</b>	No	No	No
<b>Slovenia</b>	Only for universal service.	Only for the operator with significant market share.	No
<b>Spain</b>	Operators have the obligation to publish on their websites, on a quarterly basis, information on the QoS actually provided in their services for fixed and mobile telephony and broadband services. Additionally, the Ministry of Industry compiles and makes public this information on its website: <a href="http://www.minetur.gob.es/telecomunicaciones/es-ES/Servicios/CalidadServicio/informes/Paginas/Informes09.aspx">www.minetur.gob.es/telecomunicaciones/es-ES/Servicios/CalidadServicio/informes/Paginas/Informes09.aspx</a>		N/A
<b>Sweden</b>			
<b>Switzerland</b>	No. However, there is a legal basis (Article 12a LTC).	No. However, there is a legal basis (Article 12a LTC).	No

<b>Turkey</b>	No. But NRA may publish or request the operator to publish.	No. But NRA may publish or request the operator to publish.	No government-endorsed site exists where users can test the speeds and characteristics of their broadband connections. But some ISPs provide a site where users can test their speeds.
<b>United Kingdom</b>	<p>Until 2009, certain providers of fixed voice services were required by the regulator to collect and publish specific aspects of customer service information, such as complaints data or faults resolution times. However, following a review, Ofcom decided to withdraw this requirement as it was decided that the information was not meaningful or comparable. A link to this decision can be found here:  <a href="http://www.ofcom.org.uk/consult/condocs/topcomm/statement/">www.ofcom.org.uk/consult/condocs/topcomm/statement/</a></p> <p>There is currently no requirement in place requiring mobile or fixed line operators to publish information on QoS.</p>	<p>At present there is no formal requirement placed on broadband providers to publish information of QoS. However, Ofcom currently undertakes regular speeds tests on ISPs' performance, the results of which are then published on its website. The tests capture information on the relative speed of broadband providers' end-user experience, which provides a useful guide for consumers and others to judge which operator supplies the fastest speeds. More information can be found here:  <a href="http://stakeholders.ofcom.org.uk/market-data-research/other/telecoms-research/broadband-speeds/main/">http://stakeholders.ofcom.org.uk/market-data-research/other/telecoms-research/broadband-speeds/main/</a></p>	No
<b>United States</b>	No	No	Yes: <a href="http://www.fcc.gov/encyclopedia/broadband-speed">www.fcc.gov/encyclopedia/broadband-speed</a>

Source: OECD