



Activity Report ComCom 2010



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

**Swiss Federal
Communications Commission
ComCom**

The most important activities at a glance

Access procedures

Unbundling

ComCom reduces the monthly price for unbundling of a subscriber line to CHF 16.70 for the year 2010.

Interconnection

Interconnection prices were also reduced slightly compared to the Swisscom offering for the years 2009 and 2010.

Leased lines

Swisscom has been obliged to offer cost-based prices for leased lines with bandwidths from 2 Mbit/s to 10 Gbit/s. The existing wholesale prices have been greatly reduced.

Mobile termination

The procedures have to be aborted, because the parties have reached an agreement in negotiations.

Licences

Universal service

The universal service was fully guaranteed nation-wide in 2010 in accordance with the provisions of the law.

Mobile radio frequencies

In November 2010, ComCom launched the invitation to tender for the re-allocation of mobile radio frequencies.

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Preface of the President

In the nineties everyone was fascinated by the novelties of information technology: mobile phones – admittedly somewhat cumbersome – made their appearance and the internet and email replaced the good old letter. Communication was cheaper, despite all the new possibilities – a five-minute call to the USA suddenly costs less than a five-minute local call a few years before!

Fifteen years later this hype, this fascination is over; everyone takes it almost for granted that the telephone is also a TV set, a juke box, a dictionary, etc. And people also take for granted the fact that prices – thanks to flat rates – are approaching zero. Telecommunications have become a commodity – an everyday thing which people know “just works”.

Anyone who has been able to follow and experience this development over the last 20 years is happy about this fact, because it shows that electronic communication works – and it works well, cheaply and everywhere – with no ifs and buts. The goal of the Telecommunications Act would appear to have been almost completely achieved.

But is this really the case? No, because these natural demands of the Swiss people are constantly growing.

Every six months, the volume of mobile data doubles – and today in the fixed network we need much, much more bandwidth than in 2000. Our needs grow, based on the technical possibilities and applications – such as the iPhone, iPad, HDTV, cloud computing, etc. It is also the job of the authorities to help ensure that it is possible to build the infrastructure for these services.

The expansion of the mobile network and of the fibre network should be promoted in a coordinated manner. It is an economic necessity for Switzerland to assume a leading position internationally in this context. It is also essential for all participants in the market to have access to these networks. On the one hand competition between telecom services and networks must be promoted, and on the other hand it is necessary to build this billion-dollar infrastructure quickly. Finding the right balance and achieving both goals is one of ComCom's key tasks. You will see from this Activity Report how we are tackling this task. I wish you an enjoyable read.



Marc Furrer, President

April 2011



Summary and outlook

In 2010 the telecoms sector benefited from the economic recovery after the financial crisis. After a decline in the previous year, sales increased for most providers.

However, in the 2010 telecoms year the following developments were indicative of future trends:

First: The move towards the age of optical fibre continues. Various municipal utilities and Swisscom are investing large amounts in constructing fibre networks. By the end of 2010 some 250,000 households and businesses already had fibre coverage.

At the industry's request, in 2008 ComCom set up an "FTTH Round Table" as a discussion and coordination platform for interested companies. The round table participants agreed on an important principle: to avoid the construction of parallel networks, network construction must take place in a coordinated manner and multiple fibres will be laid. Moreover, all providers must have access under the same conditions and at different network levels to the optical fibre network. This will ensure competition and consumers can continue to choose their telecommunications provider freely. At the technical level, the industry also agreed on uniform

standards for domestic installations and network access with services.

The FTTH Round Table also supported the agreement between network operators and landlords regarding fibre connections to dwellings and the development of a common platform to process orders relating to fibre networks.

Secondly: The planned merger of Sunrise and Orange was prohibited by the Competition Commission (ComCo). The key factor in ComCo's decision was the concern that the merged companies, together with Swisscom, would establish a joint dominant position in the mobile market, which could have a negative impact on competition in mobile communications. From ComCo's viewpoint, these disadvantages outweighed the doubtless significant efficiency gains and synergies of a merger, with reference, for example, to the upcoming major investments in one instead of two LTE mobile networks.

Thirdly: On 17 September 2010, the Federal Council published a report entitled "Evaluation of the telecommunications market", which provides an impressive and comprehensive analysis of the Swiss telecoms market. The evaluation report covers failures of the market and of the Telecommunications Act (TCA) in many areas. The Federal



Council, however, came to the conclusion that a revision of the TCA is not urgent at the moment.

ComCom supports revision of the TCA

ComCom broadly shares the Federal Council's analysis and the proposals for action outlined in the evaluation report. In the interest of consumers, Parliament should therefore make a number of ad hoc amendments to the Telecommunications Act (TCA). This would be one way of improving consumer protection, for example by simplifying switching between providers and improving price transparency.

ComCom supports the measures proposed in the evaluation report to prevent future monopolisation of fibre access by network operators. Today, however, in ComCom's opinion, no regulation of fibre is needed. Such regulatory instruments should, however, be provided at the appropriate time; this would also increase legal certainty for all market players.

Today, the Telecommunications Act lacks the flexibility which is essential in a very dynamic technological environment. ComCom is therefore recommending the introduction of flexible, technology-neutral regulatory instruments which would allow timely "ex-officio" intervention in the event of a failure of the market.

Outlook

The most important guideline for ComCom's activity is the defining clause in the Telecommunications Act (Art. 1 TCA) which states that the purpose of the TCA "is to ensure that a range of cost-effective, high quality, and nationally and internationally competitive telecommunications services is available to private individuals and the business community." This is to be achieved in particular by means of a reliable, affordable universal service throughout Switzerland and by effective competition.

Through its decisions, ComCom seeks in the interest of consumers to promote sustainable competition between providers and the efficient utilisation of the frequency spectrum. Furthermore, it continues to strive to stimulate an investment-friendly environment and technological innovation in the telecommunications market.

The following are the major activities in 2011:

- **The award of mobile frequencies:** The invitation to tender for mobile frequencies and the award by auction will take place in the course of 2011 (see below for further information).
- **Round table on fibre to the home (FTTH):** If the companies involved continue to consider the FTTH Round Table to be necessary, ComCom will continue to moderate this discussion platform in 2011.

- **Internationally:** Together with OFCOM, ComCom is monitoring regulatory practice in the other European states. To this end it is taking part as an observer in meetings of the BEREC and is actively involved in the Independent European Regulators' Group (IRG). In 2010 the president of ComCom joined the board of the IRG.

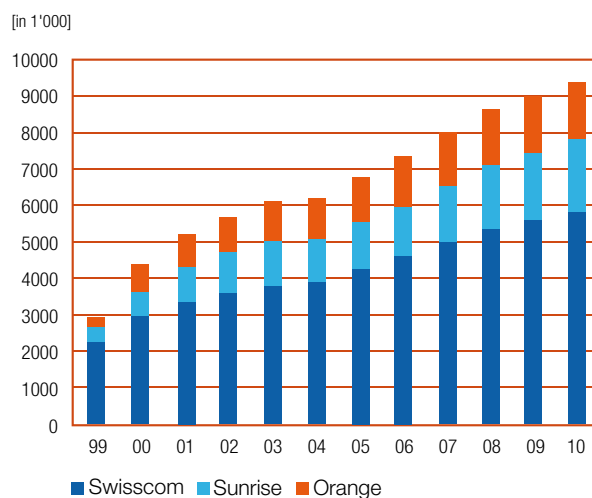
The mobile telephony market

In Switzerland, the coverage of mobile telephony services is almost total. It is often possible to make calls even in the remotest areas. The GSM networks serve almost 100% of the population and cover more than 90% of the territory.

Since 2007, the country has had more mobile phone devices than people; however, the number of subscribers also continued to increase in 2010. With a penetration rate of 120% at the end of 2010, Switzerland is at precisely the same level as the European average.

The three national GSM network operators have all seen their subscriber numbers increase (cf. fig. 1). In total, 384,000 new mobile customers were recorded in 2010. Orange gained only 6,000 new customers in 2010, less than 2% of the total. Its market share falls to 16.7% at the end of 2010. In contrast, Sunrise, which undoubtedly benefited in the second half of the year from the iPhone effect and which recruited 152,000 new customers (or 40% of the total), saw its market share increase to 21.4%. Like last year, Swisscom gained nearly 60% of all new customers, with 226 000 acquisitions. At the end of 2010 its market share of 61.9% remains high compared to other countries. In the EU, the average market share of the dominant operator has been steadily declining and was around 38% at the end of 2009.

Fig. 1: Mobile phone connections in Switzerland



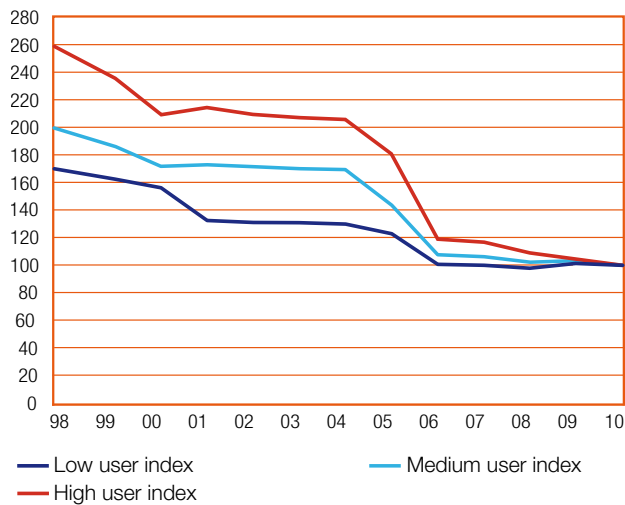
As regards the evolution of prices in mobile telephony, there was a slight overall fall between 2009 and 2010 (cf. fig. 2). A study published by OFCOM at the end of 2010, however, presents contrasting results: whilst the price of mobile contracts has fallen somewhat, the cost for users of prepayment cards increased slightly between 2009 and 2010. Prepaid products are more attractive to people who make little or average use of their mobile phone. Contracts, however, are more appropriate to the needs of heavy users.

2010 saw the arrival of new resellers of mobile services, mostly under a well-known brand name, enabling them to target a certain public. It is necessary to qualify the real impact of all these resellers and mobile virtual network operators (MVNOs) on the market in view of their low share of the market.

The agreement reached in early September 2010 to gradually reduce up to 50% of mobile termination charges, however, had only a minor effect on prices for mobile services, in particular because its main consequence is to reduce operators' revenues. The customers in the fixed network, however, benefited from this reduction of the wholesale prices.

Mobile termination charges in Switzerland are no longer the highest in Europe and are now at about the European average. But these rates are the result of negotiations and are fixed by the operators among themselves. The current system of ex post regulation, however, does not allow to ComCom to intervene in this area to protect consumer interests (see below).

Fig. 2: Evolution of end prices for mobile telephony in Switzerland [cost indices by user profile, 100 = 2010]



Source: OFCOM, "Kosten der Mobilfunkdienste", December 2010

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The growth in mobile data traffic

2010 was characterised by the explosion of roaming internet use throughout the world and in Switzerland, with the proliferation of smartphones and the arrival of touch-screen tablets OFCOM estimated that at the end of 2009 more than 20% of mobile users were using the UMTS networks in Switzerland. Globally, in 2010 some 300 million smartphones were sold. In Switzerland too, the proportion of smartphones has increased greatly. Of the 3.97 million mobile phones sold in Switzerland in 2010, 1.5 million, or 38.1%, were smartphones (Weissbuch 2010, www.weissbuch.ch).

Since July 2010, the iPhone, already available from Swisscom and Orange since mid-2008, has also been marketed in its new version 4 by Sunrise. Switzerland is purported to be the country with the highest density of iPhones in the world. For its part, the iPad was launched in Switzerland in spring 2010. Since then, almost all the manufacturers are imitating Apple and trying to position themselves in this very buoyant market.

These new versatile multimedia tools, with the multitude and variety of applications available, are considerably changing the way people access mobile content.

The operators have taken this on board and are offering many new mobile surfing products, especially for the young, who are enthusiastic consumers of mobile internet access. Swisscom and Orange also offer their own applications for smartphones.

After the success of video streaming sites, music streaming (Deezer, Last.fm, Spotify ...) is gaining more and more acceptance as a genuine legal alternative, and sometimes a complementary one, to purchases on platforms such as iTunes. In neighbouring France, for example, Orange acquired shares in Deezer and is including a service offering with some of its internet and mobile packages. After just six months, the "premium Deezer music" service offering had gained more than 500,000 French subscribers.

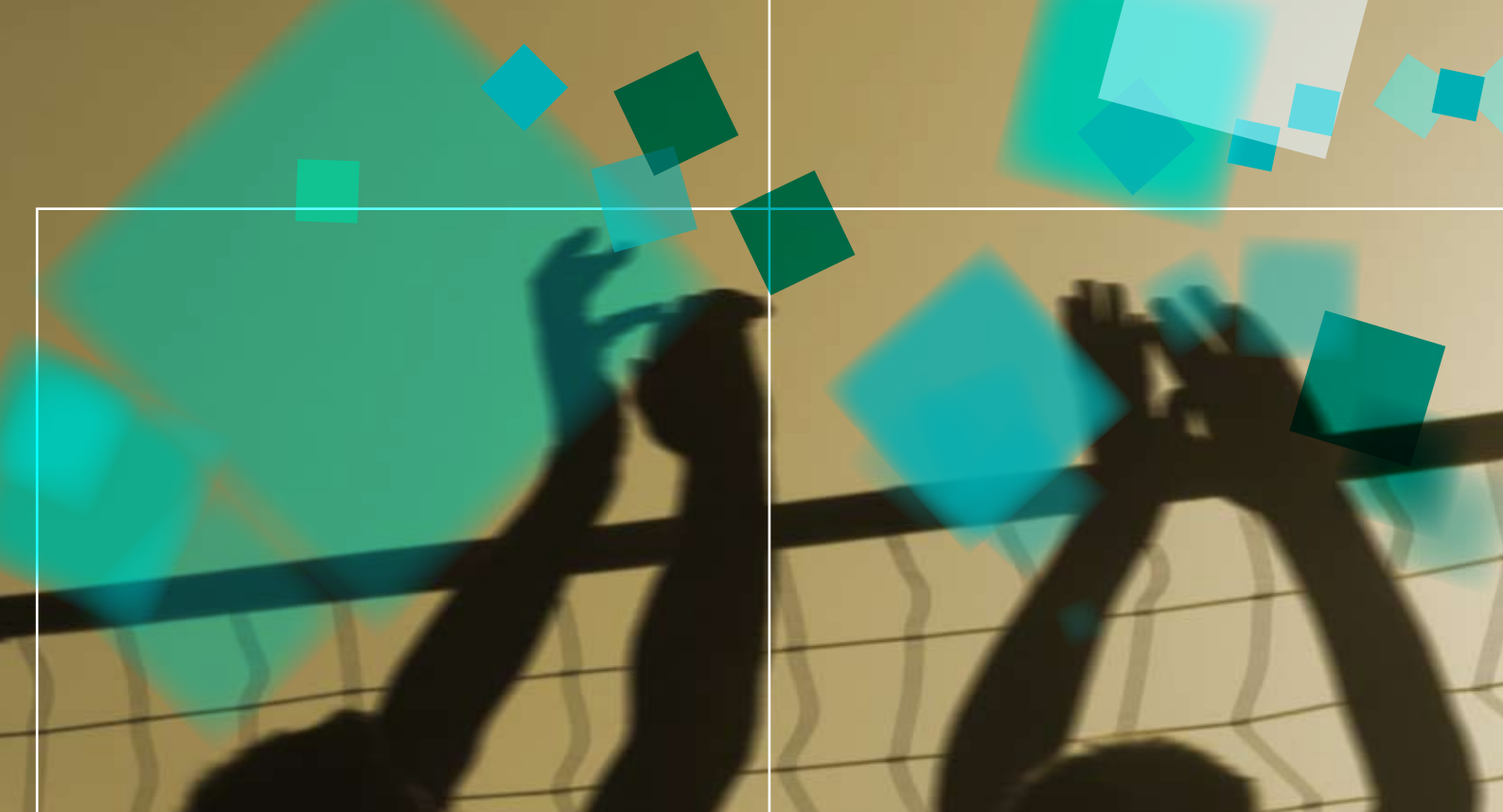
In terms of new applications, we again note the significant growth in cloud computing. Initially designed for businesses to lease and outsource IT resources, cloud computing has been booming in recent years and the trend is expected to continue. But the phenomenon is moving increasingly towards use by individuals. Backup, syncing and online file-sharing solutions such as Wuala (originating from ETH Zurich) or Dropbox also benefit from the spread of broadband internet connections on fixed and mobile networks.

But these are all new types of use which also contribute to the large increase in data traffic. According to Swisscom, data traffic on the mobile network quadrupled during 2010. It is generally accepted that this traffic doubles actually every 6 or 7 months.

To cope with this, the three national operators all have made investments in recent years to upgrade their networks. All the operators have essentially equipped their UMTS network with HSPA, which allows transfer rates of 3.6 to 7.2 Mbps on the downlink and up to 1.4 Mbps on the uplink. HSPA technology offers internet surfing which is almost on a par with a fixed-network ADSL connection.

Thanks to a combination of second- and third-generation mobile telephony, operators can therefore offer mobile access to the internet from almost anywhere. UMTS/ HSPA services now cover between 80% and 90% of the population, depending on the operator.

In future, Swiss operators will nevertheless have to invest in the mobile phone technology of the future: LTE (Long Term Evolution of UMTS). LTE significantly increases spectral efficiency compared to HSPA. It also allows, at relatively low network costs, the transfer of data over wider bandwidths (up to 100 Mbit/s on the downlink and 50 Mbps on the uplink).



The launch of the fourth generation is presumably not expected to be constrained by a limited supply of mobile phones which are compatible with this technology. The wide availability of smartphones, the multitude of available applications and users' consumption patterns for mobile services (streaming, social networking, etc.) generate a very different situation from that prevailing in the early 2000s, when UMTS was rolled out.

In the United States, Verizon and AT&T are already investing in LTE networks, sending a strong signal to equipment manufacturers.

The Scandinavian telephony operator TeliaSonera had already put into service the first two LTE networks in Europe in late 2009, in Stockholm and Oslo. Several countries (Finland, Sweden, the Netherlands, Germany) have already assigned or are about to assign 800 MHz and 2600 MHz frequency bands (France, Belgium).

In December 2010, the European Commissioner responsible for telecommunications, Neelie Kroes, expressed the hope that the member states of the European Union would have completed the processes for awarding available frequencies to operators in 2012.

In Switzerland, as early as 2009, ComCom had begun the preparatory work for the re-allocation of all mobile telephone frequencies, including in its consideration the perspective of deploying LTE networks. In November 2010, ComCom launched a public invitation to tender for the award of mobile radio frequencies (see below).

Telephony in the fixed network

With the growth in mobile telephony over the last 10 years, the number of calls from landline telephones has fallen considerably. Since 2008, the number of calls initiated by the more than 9 million mobile telephones has exceeded those by the 3.5 million fixed network connections. In 2009, some 55% of calls were made from mobile phones.

In addition to Swisscom's nationwide high-quality fixed network and the three mobile telephone networks, in the connection sector there are numerous well-developed cable TV networks, which, however, apart from Cablecom (with a CATV market share of about 55%) often provide broadband and telephone services in only one or a few municipalities. In recent years, considerable amounts have also been invested in unbundling and in expanding the fibre network (for more on this, see below).

Overall, since the liberalisation of telecommunications in 1998, consumers have made calls more frequently. The lower-cost fixed network is clearly the preferred network for longer calls; the average fixed network call duration in 2009 was 4 minutes; twice as long as on the mobile network. Customers are therefore quite sensitive to pricing, but the choice of provider is also influenced by quality considerations and a degree of customer loyalty.

Costs for calls on the fixed network fell dramatically, especially in an initial phase up to 2002 (by 40 to 60%, depending on usage behaviour). According to an OFCOM study, from 2005 to 2008 intensive users were the main beneficiaries of continuing price reductions. Prices then remained largely stable until 2010. In general, the price disparities are not very pronounced.

In contrast to the mobile telephony situation, it has to be stated that fixed network tariffs in Switzerland – measured using the OECD consumer baskets for telephony – are at the average European level. Charges for international calls are cheap internationally; they are well below the European average. The interconnection prices set by ComCom, which are paid by the alternative providers for co-use of the Swisscom network, are among the lowest in Europe.

Not surprisingly, no major changes in market shares has occurred in recent years – with the exception of the losses suffered by the Tele2 company: Swisscom has about 68% of the market, and Sunrise – as its largest competitor, together with Tele2, which it acquired – serves about 15% of customers.

At the end of 2010, Cablecom had 326,000 telephone customers and despite an overall declining market managed to gain a few thousand new telephone customers. Cablecom's market share is 8.5%. The numerous other providers all have only modest shares of the market.

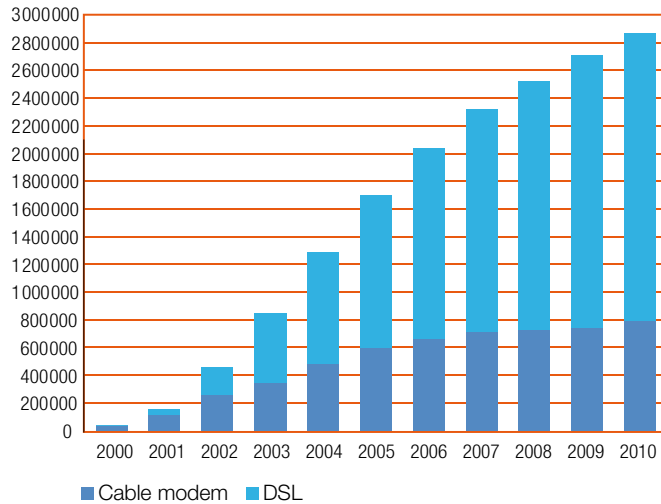
The alternative providers are seizing the opportunity to bill end user's subscriber connections themselves rather than Swisscom. In 2009 these connections numbered 120,000; since then the number has fallen again (-4.5%). Both this fall and the fall in carrier preselection (-126,000 in 2010; see below) are attributable to the increase in local loop unbundling.

Broadband on the fixed network

The progress of broadband on the fixed network continued apace during 2010. With a broadband internet access penetration rate of over 37% in mid-2010, Switzerland was in third place among the OECD countries, still just behind the Netherlands (37.8%) and Denmark (37.3%). The average for the OECD countries is 24.4% (cf. figure 3) and the figure for the EU is 25.6%.

In Switzerland, surfers continue to prefer DSL access technology via the telephone line, which is still forging ahead of internet access by cable TV (CATV). Market shares were 72.3% for DSL (2,065,000 connections in December 2010) and 27.7% for cable (792,900 connections; cf. figure 4).

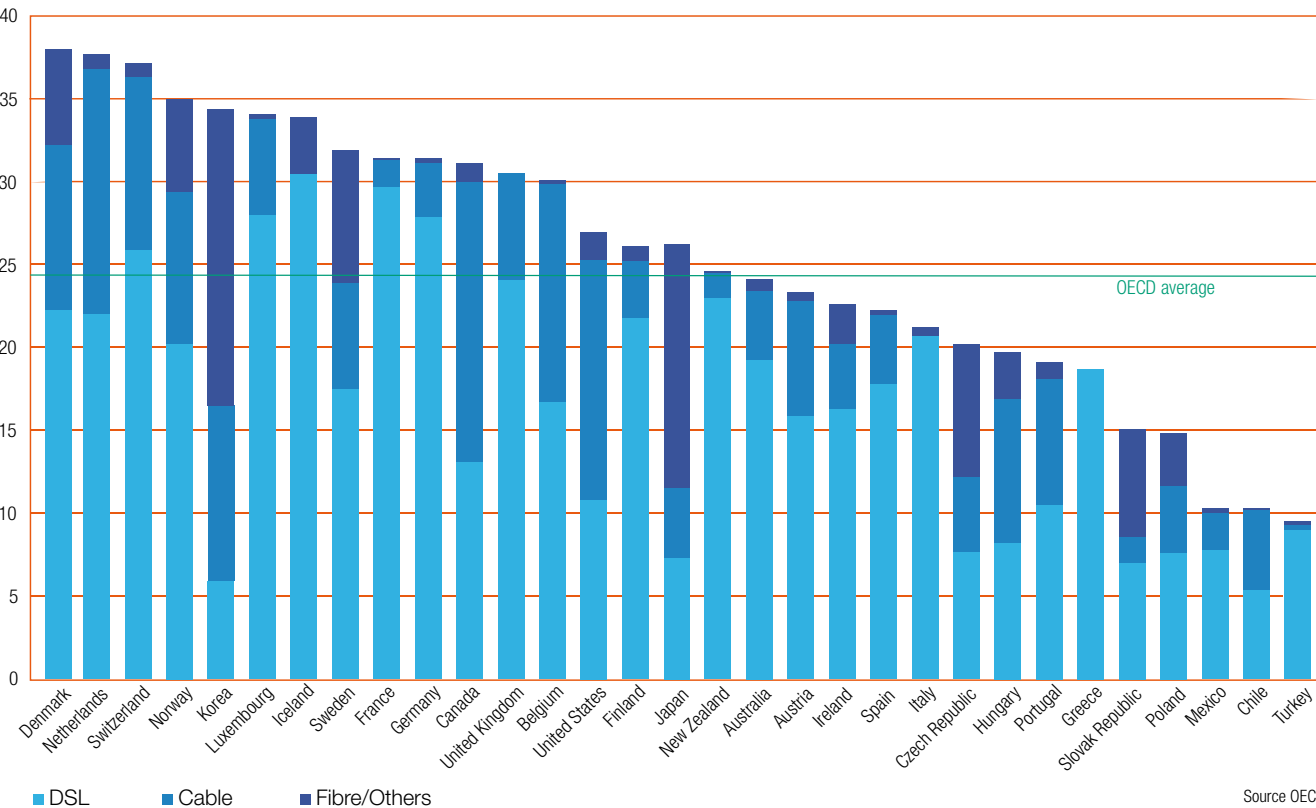
Fig. 4: Split of broadband technologies in Switzerland



Sources: Swisscom, Swisscable

Fig. 3: OECD broadband penetration, June 2010

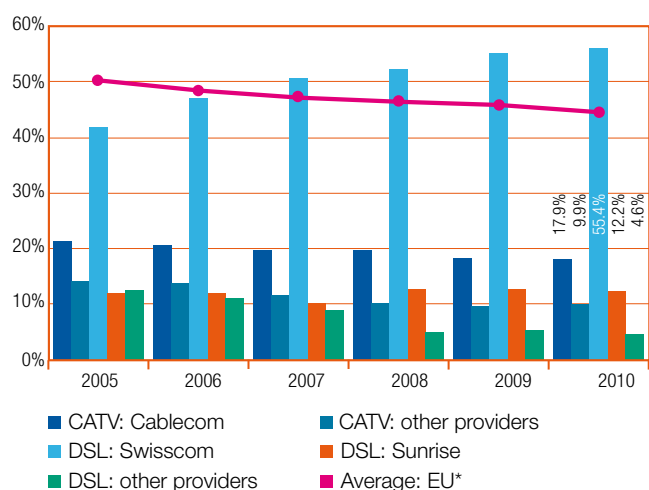
(as % of population)



Source OECD

The distribution of market shares among providers of broadband connections continues to evolve in favour of Swisscom (cf. figure 5), which at 55.4% at the end of December 2010 (compared to 54.5% at the end of 2009) is way ahead of its main competitors. The share of all the alternative DSL providers is 16.8% (thereof 12.2% for Sunrise and that of all the cable operators is 27.7%, including 17.8% for Cablecom and 9.9% for the other cable TV operators. By way of comparison, the average market share of the historic operators in the European Union has fallen continuously and was around 44% in July 2010.

Fig. 5: Market shares of broadband connections in Switzerland and in the EU, 2005 – 2010



The DSL market in Switzerland

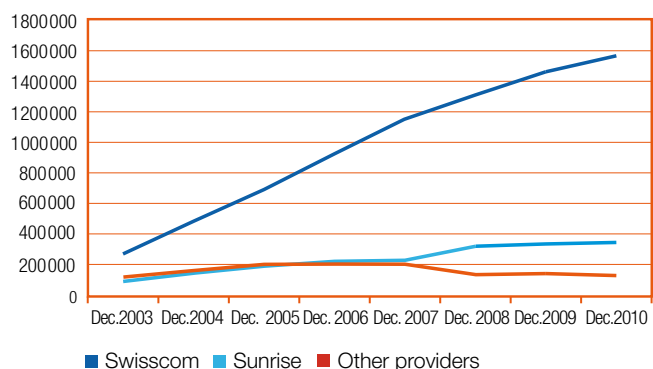
In the DSL market alone, including unbundled lines, there was an overall increase of 103,000 customers, i.e. an increase of 5.2% between December 2009 and December 2010 (fig. 6). It is worth noting that the high-speed internet market as a whole (DSL & CATV) grew by some 6% in 2010, compared with 7% in 2009 and 9% in 2008.

Although growth continues to slow down, Swisscom is still reporting the highest increase in the number of customers, with growth of the order of 106,000 customers during 2010. With 1,584,000 DSL lines, its market share consequently rose from 75.3% at the end of 2009 to 76.7% at the end of 2010.

Sunrise, for its part, gained only 10,000 new customers over the same period. This was therefore ten times less than Swisscom. With 350,000 high-speed customers at the end of 2010, including 230,000 unbundled customers, Sunrise's market share fell slightly to 16.9% at the end of December 2010 (compared to 17.3% in December 2009).

The other operators who are resellers of DSL services, however, again lost some 13,000 customers and their market shares are also continuing to fall, amounting to 6.3% at the end of December 2010, compared with 7.3% a year earlier.

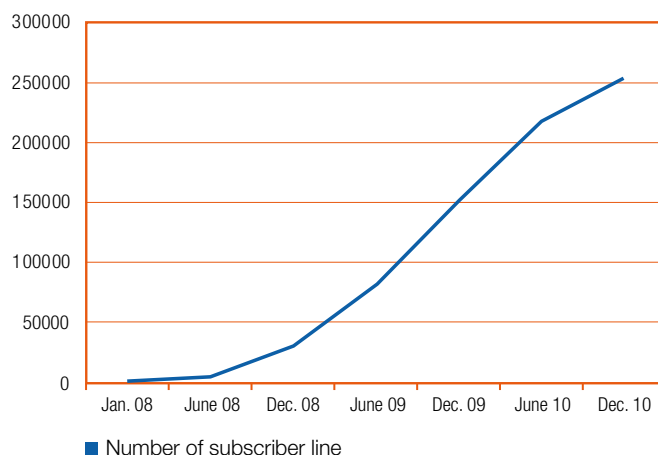
Fig. 6: DSL connections in Switzerland (including unbundling)



Progress with unbundling

The number of unbundled lines also increased during 2010, though less rapidly than the year before. After growth which was considered exceptional in 2008 (31,000 unbundled lines), the number of unbundled lines reached 153,000 at the end of 2009 and 255,000 units at the end of December 2010 (fig. 7).

Fig. 7: Evolution of the number of unbundled lines in Switzerland





Three and a half years after the entry into force of the amended TCA, which enabled the effective launch of unbundling in Switzerland, progress has been considerable. The number of fully unbundled lines (full access) already represents 53% of the DSL lines of the alternative operators.

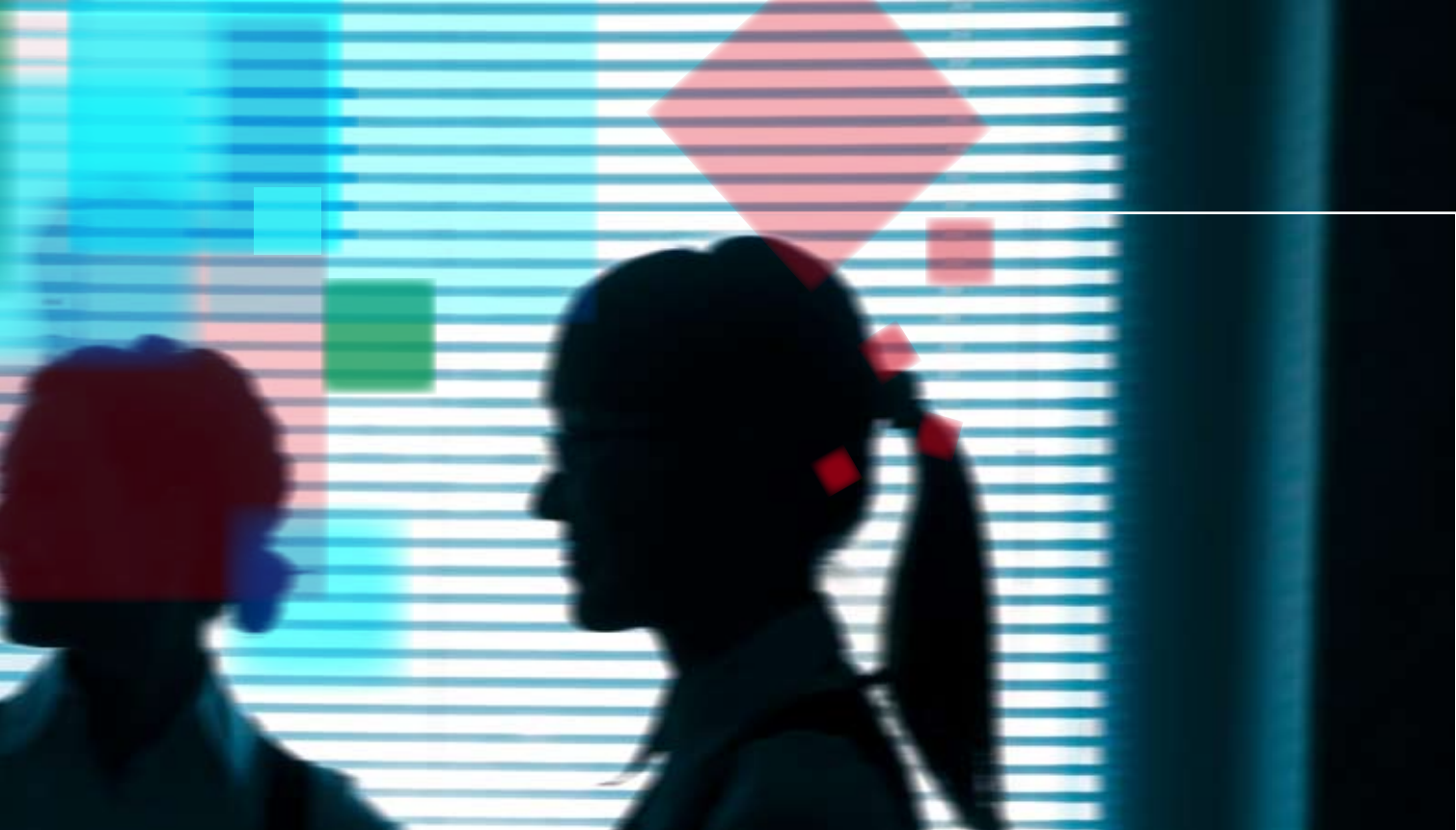
However, the number of unbundled lines represents only 12.3% of the total number of DSL lines and only 8.9% of the total number of broadband lines including CATV connections.

Furthermore, although small operators such as Colt or VTX also provide unbundled connections, in particular for business customers, the majority of unbundled customers to date are with Sunrise, which has a 90% market share in this segment. The increase in the number of unbundled lines is accompanied by a corresponding reduction in the number of Swisscom wholesale lines (resale of DSL products) (down 105,000 units between December 2009 and December 2010).

Finally, it is worth noting that although the alternative operators benefited from the first bitstream offerings in 2010, this option remains little used and the number of bitstream connections amounted to around 9000 at the end of December 2010. Note also that following the decision of the

federal administrative court in February 2009, after a case lasting two years, Swisscom finally submitted a basic high-speed access offering to its competitors at the beginning of June 2009.

In conclusion, competition remains problematic: although the cable operators have again gained internet customers and halted the erosion of their market shares, these represent only half of Swisscom's share of the market. Infrastructure-based competition therefore remains weak and sporadic. Swisscom is also winning 10 times more DSL customers than Sunrise, its main competitor in the DSL market, whilst the other service providers continue to lose customers, playing a role which is insufficient to have any effect on competition.



FTTH networks in the firming-up phase

The year 2010 was a particularly busy one in the optical fibre sector.

Several new partnership agreements for the construction of networks were concluded between Swisscom and the utilities companies during 2010 (e.g. Zurich, Freiburg, Winterthur). In addition, with the signing of cooperation agreements between Swisscom and the utilities companies of Basel, Berne, Geneva, Lucerne and St. Gallen in 2010, the coordinated construction of fibre networks became a reality in several regions.

Although in June 2010 Switzerland was still ranked only 16th in the OECD's world ranking based on fibre penetration, construction of the very high-speed networks is progressing rapidly. The number of homes and businesses served by fibre in Switzerland at the end of 2010 (home passed) is now estimated at about 250,000, representing approximately 10% of households. Whilst some providers are already offering FTTH products to their customers, the exact number of contracts is unknown. Fibre roll-out initiatives are multiplying not only in the cities but also in smaller towns and rural regions. In Freiburg, indeed, it is planned to rollout fibre in the whole canton.

The agreement reached in early 2010 between the Swiss landlords' association (Association suisse des propriétaires fonciers - APFS), property companies in Zurich and Swisscom is another important factor which will further accelerate the roll-out of fibre to homes. A standard contract, which sets out the details of inhouse deployment, the ownership and the network operation and maintenance was published in June 2010. This standard contract was endorsed by many cooperating partners. Swisscom and the other network constructors will install fibre to the building's basement and also finance the cabling until the family homes. This vertical cabling will then become the property of the building's owners. The network operators will obtain a long-term exploitation right in exchange.

The work and reflection undertaken within the framework of the round table organised jointly by ComCom and OFCOM also continued successfully throughout the reporting year. The players in the market met twice, in February and August 2010. Technical guidelines for the installation of fibre within buildings were defined and published. Other areas of discussion focused on access to the network for service providers, opportunities for cooperation between network operators and the issue of constructing networks in outlying regions which are less densely populated.

In another context, the utilities companies in the cities of Basel (IWB), Berne (EWB), Geneva (SIG), St. Gallen (sgsw) and Zurich (EWZ) have developed a common platform defining the order processing and customer switching arrangements. This platform could be used on a national scale by all the operators. Its unified nature ensures access for all providers and will foster cooperation between network operators and service providers.

All these measures will allow customers to benefit more rapidly from commercial fibre-based offerings.

Today, Switzerland is already very well served by broadband: ADSL coverage is 99% of households, and about 80% of households can take advantage of VDSL with speeds up to 50 Mbit/s.

The cable operators are also playing an important part in infrastructure-based competition. It should be noted that almost 80% of Swiss households have a cable connection, although not all are compatible with very high-speed internet.

Since they already have a high-performance HFC (Hybrid Fibre/Coax) infrastructure, in 2010 the cable operators continued to invest in DOCSIS 3.0 technology, which makes it possible to boost speeds up to 100 Mbps and even more, enabling them to offer their customers new products with higher internet speeds. From spring 2010, Cablecom, for example, offered a new “Fibre Power” product in certain areas to its private customers, providing them with speeds up to 100 Mbit/s.

The investments in DOCSIS 3.0 are stimulating the infrastructure competition and the development of optical fibre in Switzerland.



Seated (LTR): Marc Furrer (President), Christian Bovet (Vicepresident).
 Standing (LTR): Stephan Netze, Reiner Eichenberger, Jean-Pierre Hubaux, Monica Duca Widmer, Andreas Bühlmann (Photographer: Ueli Hiltbold).

The Commission and its Secretariat

ComCom is an independent extraparlimentary official commission which is responsible for licensing and market regulation in the telecommunications sector. The Commission consists of seven independent experts, nominated by the Federal Council.

In 2010 the Commission consisted of the following members:

- **Marc Furrer, President**, Attorney and notary
- **Christian Bovet, Deputy President**, Dr. iur., Professor of Law at the University of Geneva
- **Andreas Bühlmann**, Dr. rer. pol., Head of the Office of Finance in the Canton Solothurn
- **Monica Duca Widmer**, Dr., dipl. Chem. Ing. ETH, entrepreneur with SMEs in the environment sector
- **Reiner Eichenberger**, Dr. oec. publ., Professor of Economics at the University of Fribourg
- **Jean-Pierre Hubaux**, electrical engineer, Prof. EPFL Lausanne
- **Stephan Netze**, Dr. iur., LL.M., Attorney

In 2010, the Commission met for sessions on 10 days. It also took numerous decisions by way of circulation. To ensure that the Commission can fulfil its tasks, it continuously informs itself about events in the market and the competitive situation. To this end, it visits companies in the ICT industry and invites representatives of providers, consumers and industry associations to discuss current topics.

The Commission has its own secretariat, which is responsible for coordinating affairs, organising the activities of the Commission and providing the public with information. One female employee and two male employees work in the secretariat; in total, the three part-time jobs amount to 2.4 full-time equivalent posts.

Activities of the Commission

ComCom is the Swiss licensing and regulatory authority for the telecommunications sector. As an independent official commission it is not subject in its decisions to any instructions from the Federal Council or the Department.

The purpose of the Telecommunications Act (Art. 1 TCA) is to provide guidelines for the Commission's decisions: the objective is to reliably provide the population and businesses with a wide range of high-quality, affordable telecommunications services. Apart from the universal service which provides the whole of Switzerland with telecommunications services, these goals are to be achieved by means of effective competition.

ComCom's most important tasks according to the Telecommunications Act are:

- granting radio licences for use of the frequency spectrum (Art. 24a TCA),
- awarding the universal service licence (Art. 14 TCA),
- laying down the access conditions and prices when service providers fail to reach an agreement (Art. 11 and 11a TCA),
- approving the national numbering plans (Art. 28 TCA),
- fixing the applicable terms for number portability and the free choice of provider (Art. 28 TCA),
- taking measures and sanctions in the event of violation of the applicable law and, where appropriate, revoking the licence (Art. 58 TCA).

In fulfilling its tasks, ComCom works closely with the Federal Office of Communications (OFCOM). On behalf of ComCom, OFCOM with its technical services prepares the business of the Commission. The Commission's decisions are implemented by the secretariat or OFCOM.

The following sections provide an overview of ComCom's activities in 2010.

Access procedures

Since April 2007, the law (Art. 11 TCA) has provided for the following access variants to the infrastructure and services of a market-dominant provider:

1. Full unbundling of the local loop
2. Bitstream access (for four years)
3. Billing for fixed network subscriber connections
4. Interconnection
5. Leased lines
6. Access to cable ducts, in so far as these have sufficient capacity.

At the end of 2010, one current access procedure was pending with ComCom. This involves the fixing of prices and conditions for access to cable ducts, access to Swisscom exchanges within the framework of co-location and billing for the local loop.

A procedure involving fast bitstream access is still suspended, as the parties have been indicating since the summer of 2009 that they wish to negotiate with each other. One procedure is also suspended until the Federal Administrative Court has ruled on ComCom's actions in relation to the fixing of prices for leased lines (see below).

The timescale for access procedures

In Article 11a, the Telecommunications Act includes the provision that the Commission should decide on access procedures within seven months of submission of an application.

The applications are investigated by OFCOM. The procedure begins with an exchange of correspondence between the parties, which generally extends over several rounds and which often involves having to approve an extension of the deadline. If the issue of market dominance is disputed, then an expert report on this is sought from the Competition Commission (ComCo). At the request of the Competition Commission, basic information for this report is also collected by means of a market survey. The other procedural stages are: the very time-consuming provision of evidence of costs by the dominant provider, the price calculations by OFCOM, consultation of the price monitor, the repeated granting of a fair hearing, and the decision-making process by ComCom.

Long experience shows that the seven-month period cannot be complied without sensitively restricting the rights of the parties. This is especially true when external expertise has to be sought and when prices have to be fixed in the procedures.

Full unbundling and interconnection

In 2008 ComCom set the price for full unbundling and co-location for the first time, with the monthly price for the unbundled subscriber lines set that year at CHF 18.18. The prices for installation and operation of equipment in Swisscom exchanges (co-location) were also greatly reduced.

At the same time, ComCom additionally reduced interconnection prices for 2007 and 2008 by up to 30%.

Swisscom had accepted the prices set by ComCom, and this provided the alternative providers with clarity concerning the level of cost-based prices.

2009 and 2010 prices

As a result of extensive cost analyses and price calculations that were carried out by the Federal Office of Communications (OFCOM), in December 2010 ComCom reduced the monthly price for the unbundling of a domestic access line for the year 2009 to CHF 17.30 and for 2010 to CHF 16.70. Furthermore, ComCom also reduced slightly further the prices for co-location and interconnection.

As prescribed by the Federal Council in Article 54 of the Telecommunications Services Ordinance (TSO), since the year 2000 access prices have been set using the LRIC method of calculation (Long Run Incremental Costs).

The interconnection prices calculated using LRIC are among the lowest in Europe, while the unbundling price in 2010 was some CHF 4 above the European average.

All parties lodged appeals before the Federal Administrative Court (FAC) against the fixing of prices by ComCom. Both the price reductions applied by ComCom and the implementation of the LRIC method were challenged.

According to longstanding practice, ComCom uses the LRIC method to calculate the costs which would be incurred by an

efficient provider if it were to construct a new network using modern technology under competitive pressure. Accordingly, the calculations do not include the historical costs of the market-dominant provider, but rather current replacement costs. The Commission takes the view that the calculation method employed for many years is based on the wording of the Act and the Ordinance. A change in the LRIC method would therefore require a change to the legal basis.

This established practice of ComCom's was affirmed by the Federal Administrative Court (FAC) in April 2011 and judged a correct implementation of article 54, TSO (cfr. FAC sentence of 8 April 2011, A-300/2010, www.bvger.ch).

Third-party effect and interest rate on claims

In February 2010, the Federal Administrative Court (FAC) ruled on the disputed issue of the direct third-party effect of ComCom decisions (BVGE 2010/19): The court found that providers who are not themselves involved in a procedure cannot automatically benefit from newly established access conditions. At the same time, however, the Federal Administrative Court stated that the non-discriminatory offering did apply – including retroactively. This means that the providers have to lodge claims in a civil court.

ComCom is, however, empowered, within the framework of an access procedure, to decide on a third-party clause disputed between the parties.

In the aftermath of the FAC's verdict, the Commission had to decide on a disputed third-party clause within the framework of an access procedure. This related not only to the base rate of repayment (1.3% above the 12-month CHF Libor) but also to the precise procedure for the calculation of interest (cf. the final decision on Sunrise vs. Swisscom of 21.06.2010 on the ComCom website).



Leased lines

In two parallel procedures, ComCom decided in March 2010 that Swisscom is dominant in the market for leased lines in the access network. In the trunk network, ComCom's assessment is that Swisscom is not market-dominant wherever at least two other network operators can provide leased lines in addition to Swisscom.

Such a market situation exists mainly between the major urban areas and leads to competition in this sector of the fixed network.

With the aim of intervening in the market only where no competition exists, ComCom has adopted a dynamic approach: where the alternative providers further expand their own infrastructure, regulation can be dispensed with in the future.

Furthermore, Swisscom had claimed that it was market-dominant only in the case of leased lines with a capacity of 2 Mbit/s. It had therefore restricted its cost-based offering to leased lines with this bandwidth.

Swisscom was therefore obliged by ComCom's decision on the one hand to publish an offering with cost-based prices for leased lines with bandwidths from 2 Mbit/s to 10 Gbit/s

by the end of May 2010 and on the other hand ComCom has retroactively reduced Swisscom's wholesale prices for leased lines for 2007, 2008 and 2009 by 15 to 30%.

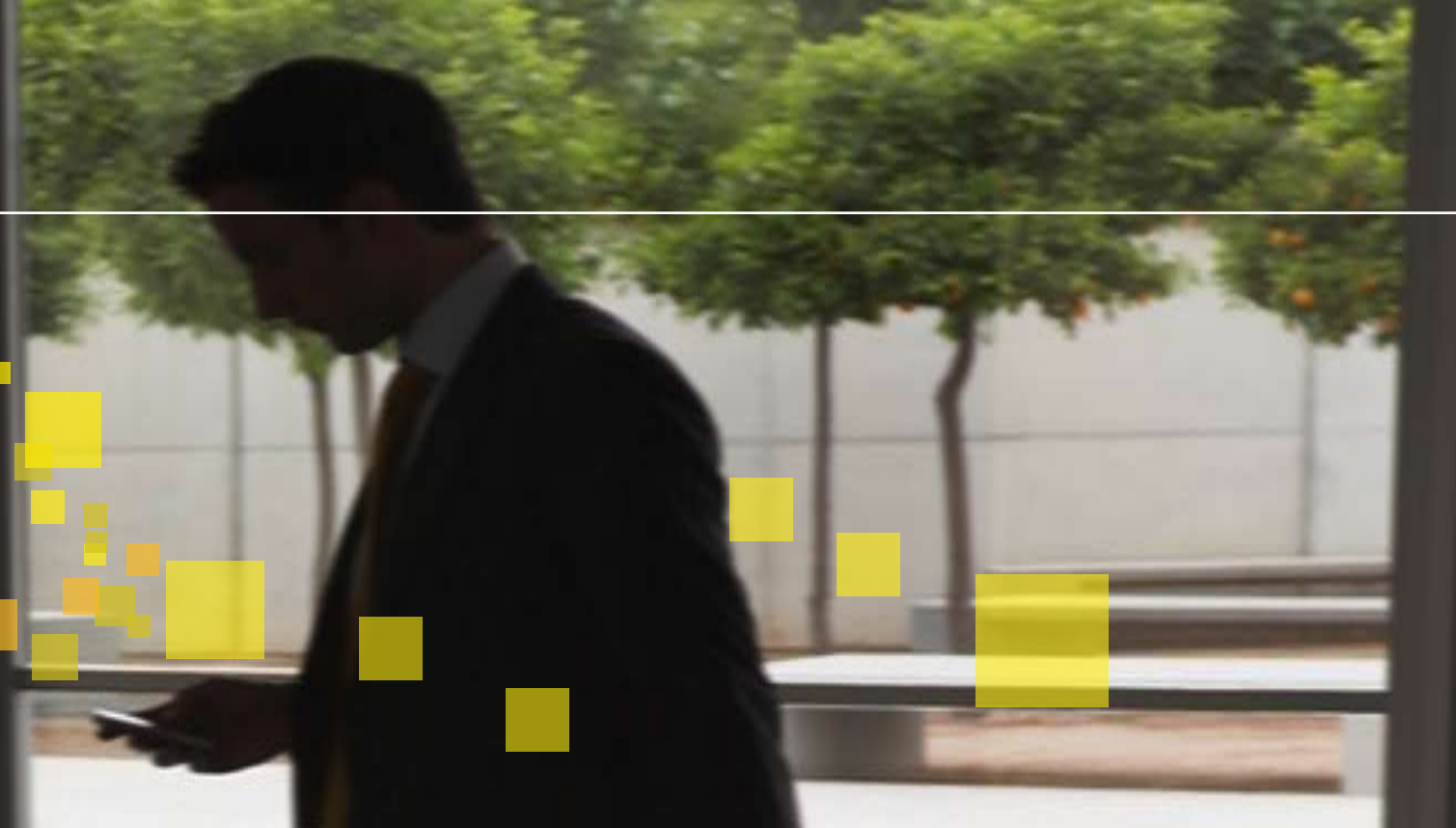
This means that the alternative telecommunications service providers now have the option of acquiring leased lines throughout Switzerland with bandwidths from 2 Mbit/s to 10 Gbit/s at competitive prices.

In addition, ComCom has also taken a decision regarding various quality characteristics of leased lines, such as, for example, availability or the technical requirements which are regularly agreed between providers in the form of service level agreements.

ComCom's leased-line decisions did not have the force of law as of the end of 2010, as they had been referred to the Federal Administrative Court.

What are leased lines?

The term "leased line" designates the provision of transmission capacities which are provided within telecoms networks as connections between two specific points. Leased lines are required to exchange large volumes of data between two locations.



Leased lines are important for the alternative telecommunications providers both in the business client sector and for connections within their own network. In the case of business clients, the providers use leased lines to link different business sites to each other. In addition, leased lines are important for the alternative providers themselves, as they use them to link different parts of networks in the mobile radio and fixed network and temporarily bridge gaps in connections. The construction of independent infrastructures is time-consuming and demands high levels of investment. The alternative providers are therefore dependent in the meantime on access to Swisscom's network to enable them, for example, to connect an unbundled exchange with their own network.

Mobile termination

Termination charges are the fees which operators charge for routing calls on their respective mobile networks and which are taken into account in calculating the price charged to users.

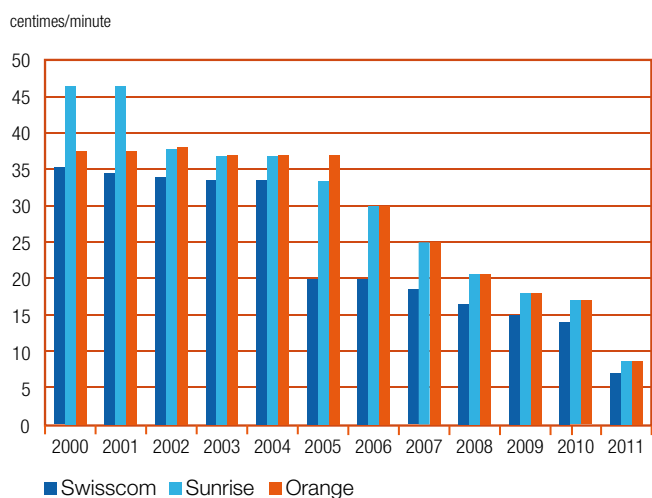
At the beginning of 2010, two applications for the fixing of cost-based mobile termination charges were submitted. OFCOM addressed these procedures, which could have led to a reduction in prices to a cost-based level, without delay. The resulting impending risk of prices being fixed by ComCom probably provided an impetus for the negotiations initiated among providers: in September 2010 the mobile operators

announced an agreement and a reduction in mobile termination charges. In view of this agreement, ComCom was obliged to terminate the procedure, as it can take action only on request, not ex officio. As in 2007, it was therefore again impossible for ComCom to examine whether the prices being charged are actually in compliance with the law.

In early 2010, Sunrise and Orange were still charging 17 centimes per minute, and Swisscom 14 centimes per minute, for the termination of calls on their mobile networks. In the negotiations, the providers agreed not only on a price reduction, but also on continuing asymmetric charges between Swisscom and the network operators who entered the market later – Orange and Sunrise: as of 1 October 2010, the operators reduced mobile termination charges to 10 centimes per minute (Sunrise and Orange) and 8 centimes per minute (Swisscom). Since January 2011 Sunrise and Orange have been charging 8.75 centimes per minute and Swisscom 7 centimes per minute.

The reduction in mobile termination charges in October 2010 has benefited customers in the fixed network: several providers subsequently announced that their customers would enjoy tariffs up to 25% cheaper for calls from the fixed network to mobile networks in Switzerland. Some of the prices for calls between mobile networks were also reduced.

**Fig. 8: Mobile termination rates
in Switzerland 2000-2011**



How is an access procedure carried out?

The primacy of negotiations is laid down in the LTC. Before the Commission can decide on the prices and conditions for interconnection or access, the providers must first attempt to reach an agreement via negotiations. If no access agreement can be reached **within three months**, the provider may lodge a request with the Commission for an access decision to be taken. The matter is then investigated by OFCOM.

When there is a question as to whether one provider occupies a dominant position in the market, it is necessary to consult the **Competition Commission (ComCo)**.

This procedure is also known as “ex-post regulation”. In contrast, “ex-ante regulation”, which does not recognise the primacy of negotiation, is practised in the EU. The regulatory authorities in the EU countries can intervene independently and at an early stage in markets in which competition is not effective.

Licences

In accordance with the Telecommunications Act (TCA), ComCom awards radio and universal service licences.

However, ComCom has delegated to OFCOM the task of awarding radio communication licences for telecommunication services which are not subject to a tender procedure (for example, licences for radio amateurs or company radio) and licences which are intended to be fully used for the transmission of radio and television programme services.

Below you will find an overview of the licences issued by ComCom.

Universal service

The universal service licence was awarded to Swisscom for the years 2008–2017. The quality audit of the universal service by OFCOM has shown that the quality criteria imposed by the Federal Council were also complied with by Swisscom in 2010.

Providing the population with a high-quality, reasonably-priced basic offering of telecommunications services is therefore guaranteed everywhere in Switzerland.

Public call boxes

Compared to other countries, Switzerland continues to have one of the densest networks of public telephones. However, these are actually being used less and less, as most residents have a mobile telephone. Between 1998 and 2009, the number of calls from public call boxes fell by 84%.

As of the end of 2010, the universal service included a total of 4,437 public telephone kiosks. In 2010, Swisscom applied to remove a total of 376 public call boxes. On the basis of a declaration from the municipalities concerned to the effect that they agreed to the removal, ComCom approved the requested reduction in public call boxes.

In addition, outside the universal service, Swisscom provides an additional approx. 3,500 public telephones in profitable locations. The number of telephones has also been reduced at commercially attractive locations with multiple public telephones.

What is the universal service?

The universal service consists of a basic offering of telecommunications services which must be provided nationally to all sectors of the population, in good quality and at a reasonable price. The universal service therefore ensures from the outset that any possible regional or social disadvantage does not prevent access to the most fundamental means of social communication.

It is within the remit of the Federal Council to adapt the content of the universal service periodically to social and economic needs as well as to technological developments. ComCom is obliged by the TCA to periodically put the licence for universal service in telecommunications out to tender and to award it on the basis of a competition based on criteria.

The universal service includes the public telephone service and the right to a fixed-network connection, and now it also includes a broadband internet connection. In addition, adequate coverage by telephone boxes and access to emergency call services and subscriber directories must be guaranteed. To facilitate communication for the hearing-impaired and visually-impaired, there are additional special services (such as a transcription service and switching services).

GSM licences

When the market was opened up in 1998, three GSM licences were awarded for a term of 10 years. In December 2003, ComCom had awarded a GSM licence to Tele2 and In&Phone respectively. The Tele2 licence was returned to ComCom when the company was taken over by Sunrise in autumn 2008; In&Phone's licence expires at the end of 2013.

After a transition period due to outstanding appeals, in 2009 ComCom was able to implement the planned technology-neutral renewal of the GSM licences of Orange, Sunrise and Swisscom until the end of 2013. This means that all GSM licences will expire at the same time.

Currently, therefore, four GSM licences with different bandwidths in the 900 MHz and 1800 MHz bands are in use in Switzerland.

GSM coverage

The three national network operators Orange, Sunrise and Swisscom are able to provide GSM coverage which goes way beyond the coverage provisions in their licences: virtually 100% of the population and about 90% of the territory are covered by GSM.

Allocation of free GSM frequencies

In the spring of 2010, the licensee In&Phone had publicly announced that it had taken over the antenna sites of the former licensee Tele2. In addition, In&Phone applied to ComCom for the allocation of the free frequencies previously used by Tele2.

In June 2010 – after consultation with the mobile operators – ComCom granted In&Phone a temporary right to use these 1800 MHz frequencies, but only until the re-allocation of frequencies (until the end of 2013 at the latest). In&Phone returned these frequencies at the end of 2010.

UMTS licences

In 2000, four UMTS licences were awarded by auction until the end of 2016. In 2006, ComCom revoked the UMTS licence of the 3G Mobile company without compensation, because it was not being used. Currently, therefore, one UMTS licence is being used by Orange, Sunrise and Swisscom respectively.

As is the case with GSM, all three UMTS network operators are complying with their licence conditions. Population coverage for UMTS services is between 80% and 90% or even more, depending on the provider.

Temporary allocation of UMTS frequencies

At the end of 2009, Swisscom had submitted an application for the allocation of free UMTS frequencies for temporary use. The request was justified on the basis of the volume of data on mobile networks, which had been growing rapidly for some time, and which made an expansion of the UMTS network necessary. In this way, looming capacity constraints could be avoided.

ComCom – again after consultation with the other operators – approved the application and allocated Swisscom a proportion of the free frequencies (2 x 5 MHz) for its use on a temporary basis, i.e. until the new allocation of frequencies.

Acquisition of Sunrise by CVC

In the autumn of 2010, the mobile licensee Sunrise was sold by its parent company TDC to CVC Capital Partners.

If a company intends to take over a mobile radio licence, ComCom has to approve this commercial licence transfer. In the process, ComCom verifies whether the statutory licensing requirements will continue to be met under the new ownership structure and whether competition in the telecommunications market will be substantially adversely affected (according to Art. 23 TCA).

ComCom approved the commercial transfer of the licence, since Sunrise continues to meet the licensing requirements and competition in the mobile market will not be affected by this take-over.

New allocation of mobile radio frequencies

At the end of November 2010, ComCom launched the invitation to tender for the new allocation of mobile radio frequencies. The reasons for this award procedure are many: first, the GSM licences expire at the end of 2013. Secondly, a large number of frequencies are available for the first time for use by mobile services. In addition to increasing mobile data traffic, the impending introduction of LTE and the medium-term migration away from GSM technology will be accompanied by major technological challenges.

The unique opportunity of the simultaneous award of mobile frequencies from all available bands allows operators not only to purchase a future-proof frequency package and to use the latest technologies, but also enables valuable flexibility in network planning.

By means of an early award of all of these frequencies, the intention is to provide players in the market with a long-term planning perspective and investment security. Furthermore, additional frequencies will enable network operators to meet the booming demand for mobile broadband services.

The prime objective is that consumers in Switzerland will continue to benefit in the future from high-quality, reasonable priced mobile telephony products.

The parallel allocation of the following frequencies is planned:

- 800 MHz: thanks to the so-called “digital dividend”, frequencies in the 790 to 862 MHz band are becoming available; these will be available for mobile services from about 2013. The “digital dividend” means that as a result of more efficient transmission of TV programme services, not all UHF frequencies (470-862 MHz) are now needed for broadcasting and some of the frequencies can therefore be used for other purposes.
- GSM 900 MHz: all frequencies have been allocated to Orange, Sunrise and Swisscom until the end of 2013.
- GSM 1800 MHz: the majority of the frequencies have been allocated to In&Phone, Orange, Sunrise and Swisscom until the end of 2013. The frequencies returned by Tele2 will be available soon after the auction.
- UMTS core band 2100 MHz: Orange, Sunrise and Swisscom each have a UMTS licence in this band until the end of 2016. Soon after the auction, the frequencies revoked from the 3G Mobile company will be available.
- UMTS expansion band 2600 MHz: frequencies with a bandwidth of the order of 190 MHz are currently free (2 x 70 MHz FDD and 50 MHz TDD).

Allocation by auction

With a view to transparency and non-discrimination, the award is to be made within the framework of an auction. Today’s network operators and any other interested companies can participate in the auction on equal terms. Analysis of different auction formats revealed that the combinatorial clock auction (CCA) is most appropriate for the award of small frequency blocks from different frequency ranges, as it allows combinatorial bidding on different frequency packages.

Unlike previous award procedures, the spectrum allotment for the licences will not be prescribed by ComCom but will be defined by the market participants within the framework of the auction itself. The bidders consequently have the opportunity to assemble frequency packages which best suit their business model.

In order to prevent undesirable auction results which would endanger competition in the mobile telephony market, ComCom has imposed bidding restrictions (‘spectrum caps’) in individual frequency bands. This will ensure that no individual participant in the auction can buy up all the frequency blocks and the existing operators should have an opportunity to acquire a sufficient allocation of frequencies.

Furthermore, the frequencies will be awarded in a technology-neutral manner so that it will also be possible to use the latest mobile radio technologies such as LTE. The early allocation of frequencies and a utilisation period extending up to the end of 2028 will enable licensees to plan for the long term and to make their investments on a solid foundation.

Anyone wishing to use frequencies – a scarce public resource – has to pay fees to the State in order to do so. In the case of an auction, the minimum prices for the frequency blocks are set so that appropriate licence revenue is assured. This must be guaranteed even if the frequencies are awarded at the reserve price.

The lower limit of the minimum bid is equal to the sum of the discounted licence fees for the entire term of the licence plus the costs of the award procedure. To ensure an appropriate revenue even for the especially attractive frequencies below 1 GHz, ComCom is therefore setting minimum prices which are significantly above the minimum prescribed by the Federal Council (for more details on the procedure, see the OFCOM website).

At the beginning of the tender process there was a phase in which interested companies were able to ask questions about the procedure. Since the answers to the submitted questions and comments took more time than originally envisaged, ComCom extended the deadline for submission of candidature documents. It was therefore able to examine the submissions in greater detail. The subsequent stages of the procedure are: the admission of candidates to the auction, the training of participants and the holding of the auction by OFCOM.

BWA and WLL licences

In the 3.41–3.6 GHz frequency band, during 2006 and 2007, one BWA licence with a frequency allocation of 2 x 21 MHz was awarded to Swisscom and Callix (formerly Inquam Broadband) respectively. These licences would be suitable, for example, for use with WiMAX technology.

In the autumn of 2009, Swisscom, of its own volition and without compensation, surrendered the BWA licence it had been awarded in 2006, as it clearly did not intend to offer any WiMAX services. The second BWA licence reverted to the Confederation at the end of 2010, as the licensee, Callix, filed for bankruptcy and the company was dissolved.

The last of the WLL licences auctioned in 2000 for a total of CHF 582 million, with frequencies in the 3.4 GHz and 26 GHz bands, expired at the end of May 2010. There was no interest in continued use of the frequencies in the manner provided for in the licence.

DVB-H licence

Within the framework of a criteria-based competition, ComCom awarded the first national DVB-H licence to Swisscom Broadcast. The coverage provisions, which called for coverage of about 44% of the population, were met by the end of May 2008.

Since the demand for DVB-H and in particular the availability of corresponding terminals had not evolved as expected, the licensee submitted an application in February 2010 to defer the obligation to start operation until the end of 2012.

In its decision, ComCom approved the deferment of the obligation regarding operation, but obliged the licensee to maintain the wholesale offering and to put the existing infrastructure back into operation if there is corresponding demand from third parties.

The term of the licence was then shortened to the end of 2012; the licensee is entitled to an extension of the licence until the end of 2017 provided it puts the infrastructure back into service by early 2013.



Free choice of service provider

To enable competition to take place, consumers must be able to pick and choose freely from existing providers.

In the mobile radio sector, the choice is between three network operators and various service providers which have entered into a partnership with an operator on a commercial basis. From the viewpoint of competition, it is regrettable that certain obstacles in the area of contract law often stand in the way of a simple and quick change of provider.

On the fixed network, every household is provided with the customary telephone connection by Swisscom. In parallel, there is generally also a cable television connection, via which broadband internet and telephony services have been available for some years. As a result of the liberalisation of the telecoms market it became possible for providers of telephony services to make joint use of Swisscom's network, in return for a fee.

In order to make changing one's provider as simple as possible, manual carrier selection (carrier selection call by call) and permanent preselection (carrier preselection) were introduced in 1999. In the case of carrier preselection, the change of provider is permanently fixed on the Swisscom network and the chosen provider charges its customer for telephone traffic directly. At the beginning of the liberalisation

process, carrier preselection was indeed a key instrument in promoting competition. By 2002 the number of connections on which carrier preselection was active had rapidly risen to 1.37 million, corresponding to one third of all connections. Since then the number has continuously fallen, to just 451,012 at the end of 2010. According to Swisscom, in 2010 some 111,375 carrier preselections were activated and 84,091 were de-activated. The fact that the overall number of connections with preselections is nonetheless falling is attributable to the fact that telephone connections are being unbundled or cancelled. In 2010 a further 102,000 connections were unbundled.

Number portability

Since the year 2000, it has been possible for customers to transfer an existing telephone number to a new connection operator.

In the mobile radio sector, between 120,000 and 160,000 customers have in recent years ported their number to a new provider according to Teldas, which operates the central porting database in Switzerland. In 2010, more than 200,000 mobile numbers were ported to a different mobile operator; there has been notable growth in the number of ported prepaid numbers. Thus in 2010 a total of 2.2% of mobile customers switched providers.



On the fixed network, number porting takes place only in the case of a switch between operators of their own connections (e.g. in the case of a switch to a CATV operator or unbundling by a telecoms provider). In 2010, a total of 154,544 numbers were ported from Swisscom and 15,856 numbers were switched to Swisscom. Porting of fixed network numbers increased significantly in 2004 and again in 2009. This is attributable to the introduction of telephone offerings by the cable network operators and to unbundling.

Since 2002 fixed-network providers have also been able to offer “geographical portability” on a voluntary basis: providers can allow their customers to retain their telephone number throughout Switzerland when they move house. Internet telephony providers in particular have grasped this opportunity and have offered their customers corresponding products. The traditional fixed network providers, however, have up to now only offered geographical number portability to a limited extent.

Finance

The Commission's costs are covered by administration fees – according to the “causer pays” principle as far as possible. The award of radiocommunications licences by ComCom also gives rise to substantial annual, or in the case of auctions one-off revenues for the Federal Treasury, in the form of radiocommunications licence fees. The GSM, UMTS and BWA licences generated CHF 14'357'213 of licence fees in 2010.

ComCom performs its tasks in close cooperation with OFCOM. A general overview of the revenue and expenditure of the Swiss telecommunications regulator must therefore also include the activities of OFCOM. Table 1 shows total expenditure in the form of various products. This also allows the corresponding revenues to be shown.

In 2010, ComCom's total costs including OFCOM's expenditure for the Commission amounted to CHF 4'751'754. This includes the expenditure of the Commission as a whole, with

its secretariat, of CHF 1.1 million in total. In 2010, the invoiced administration fees amounted to CHF 1'395'813.

In the case of costs related to the universal service, access procedures and the award of radiocommunications licences, the revenue-to-cost ratio varies greatly. Unfortunately, it is often not possible to bill expenditure in the same year as the one in which the costs were incurred, e.g. because of appeals or protracted procedures. This is why in the case of the “access procedures” the revenue-to-cost ratio amounts to 133% in the year 2010.

In addition, there were unavoidable activities which cannot be offset against any specific procedure: this is the case, for example, for the elaboration of economic or legal foundations, international exchanges of experiences or market development studies.

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Costs, administration fees and coverage of costs of ComCom in 2010 (including ComCom's secretariat and OFCOM's activities for ComCom)

Product	Costs (in CHF)	Administration fees (in CHF)	Coverage of costs (in %)
General foundations	1'788'037	–	–
Universal service licence	522'216	202'100	39
Access procedures	882'631	1'173'503	133
Radiocommunications licences: tender procedure and award	1'531'708	20'000	1
Supervisory measures	27'162	210	1
ComCom total (OFCOM, Commission and secretariat)	4'751'754	1'395'813	29

Abbreviations

ADSL = Asymmetric Digital Subscriber Line
BWA = Broadband Wireless Access (WiMAX/WLL)
CATV = Cable Television
ComCom = Swiss Federal Communications Commission
CSC = Carrier Selection Code
DTS = Decree on Telecommunications Services (SR 784.101.1)
DVB-H = Digital Video Broadcasting for Handheld Terminals
EDGE = Enhanced Data rates for GSM Evolution
ERG = European Regulators Group
FAC = Federal Administrative Court
FTTC = Fiber to the Cabinet
FTTH = Fiber to the Home
GPRS = General Packet Radio Services
GSM = Global System for Mobile Communications
HDTV = High-definition television
HSDPA = High Speed Downlink Packet Access
IC = Interconnection
IP = Internet Protocol
IPTV = Internet Protocol Television
ISDN = Integrated Services Digital Network
ISP = Internet Service Provider
LRIC = Long Run Incremental Costs
LRTV = Law on Radio and Television (SR 784.40)
LTC = Law on Telecommunications (SR 784.10)
LTE = Long Term Evolution of UMTS
MMS = Multimedia Messaging System
OFCOM = Swiss Federal Office of Communications
PSTN = Public Switched Telephone Network
SMS = Short Message System
UMTS = Universal Mobile Telecommunications System
VoD = Video on Demand
VoIP = Voice over IP
WiMAX = Worldwide Interoperability for Microwave Access
WLL = Wireless Local Loop

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