



# Alpine Combined

In Austria and Switzerland, once again, we carried out our broadband and fixed network test – for the second time using umlaut’s crowdsourcing methodology. How did the providers’ performance in the Alpine countries develop?



*“The level of performance is high in both Alpine countries. In Austria, Magenta receives the highest score nationwide, just ahead of A1 Telekom, which is also very good, Liwest leads regionally – but all other candidates are also convincing. The competition in Switzerland is at the highest level: All Swiss fixed network providers achieve the rarely awarded score of ‘outstanding’. In the nationwide ranking, Swisscom leads, ahead of Sunrise, which is also very strong, while Salt ranks first in the regional category. Congratulations to all candidates!”*

Hakan Ekmen, Global Networks Lead - Comms Industry and CEO of umlaut

Austria and Switzerland compete again for the first place in our broadband and fixed network test, which we also carried out in Germany about a month ago. The crowdsourcing-based evaluation by our test partner umlaut focuses on measuring and evaluating the performance and quality actually perceived by the customers of each provider tested.

The analyses look at millions of individual measurement values from tens of thousands of lines considered per country – see key figures on the right. All details about the methodology can be found in the detailed description on page 86.

Another advantage of the crowdsourcing approach is that it not only allows us to compare the fixed network

offerings in the Alpine countries with those in Germany but also with those in other countries. The development of the individual providers can also be illustrated by comparing them with their results from our test in the previous year.

## Coverage also becomes relevant

However, umlaut and connect are also constantly developing our new methodology. In the future, the geographical distribution of connections will also be included in our evaluation. You can read about the methodological approaches used to determine this value in our case study on page 84. But for now, let’s take a look at the results of this year’s alpine competition. **Hannes Ruegheimer**

## KEY FIGURES AUSTRIA

**33.2**  
million samples

**31 852**  
internet lines considered

**24**  
weeks  
(mid-February until end of July 2024)

## KEY FIGURES SWITZERLAND

**41.1**  
million samples

**39 790**  
internet lines considered

**24**  
weeks  
(mid-February until end of July 2024)



# Austria: Nationwide Operators



We rate fixed-network providers that provide their services throughout Austria and have correspondingly high market shares in a separate category.

Similar to Germany (connect 9/24), we also rate Austrian providers with a nationwide presence and a predominantly regional focus in two different categories. In connect's view, this is a matter of fairness, as the provision of fixed-network connections in a regionally limited area is much less costly for a provider than if it has to provide its services nationwide and thus also in smaller towns and municipalities as well as in the flat countryside.

Typically, this means that the customer base of nationwide providers includes more slower lines than the customer base of regional providers as the latter can concentrate on more lucrative and technically more easily accessible destinations when expanding.

There are also two criteria for differentiation in the Alpine republic: To count as a nationwide provider, a fixed network operator must provide its connections in all Austrian federal states. And secondly, the provider must have a market share of at least four per cent. As no binding figures on the market shares of individual providers are available for Austria from any neutral source, we make this decision on the basis of the customer figures published by the operators and the number of samples we see in the crowdsourcing analyses carried out by umlaut (see case study on page 84).

Of course, even nationwide network operators cannot deliver an internet connection in every location – and certainly not in every desired technology such as (V)DSL, broadband cable or fibre optics. Interested parties must therefore check which options are available for the desired connection location and at what cost.

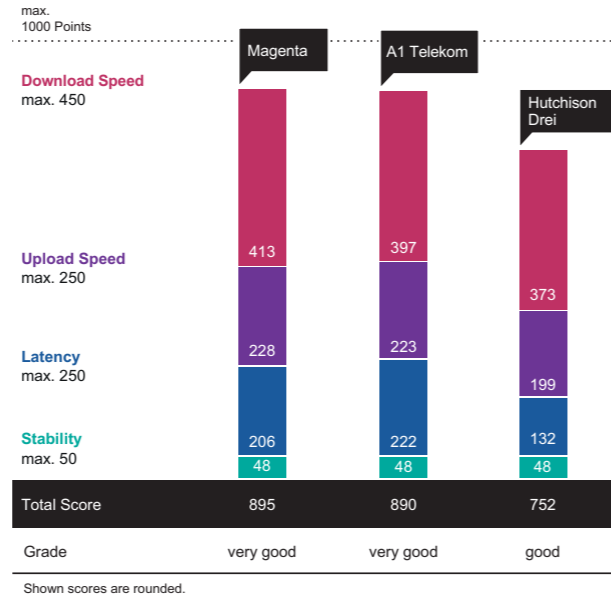
In general, we do not take into account the tariffs offered, as we carry out a purely technical performance evaluation. However, the test results make clear what level of performance customers can expect from each respective provider – especially if they choose a top-of-the-range product.

### Strong leading duo

Magenta and A1 Telekom are in a tight race at the top, with Magenta ultimately coming in first in terms of observed and measured download and upload data rates. In the latency rating, A1 Telekom is ahead with its high proportion of fibre optic and DSL lines. At Magenta, a higher proportion of cable lines leads to second place in this category.

In all three evaluation categories, Hutchison Drei came third at some distance, the gap to the top duo being greatest in the uploads and latency categories. Although Drei also offers a lot of DSL and fibre optics, this provider shows the most potential for improvement – even if it has already improved significantly on its result in our previous year's test.

In terms of stability, all three Austrian providers active nationwide are on a par. Despite all the differences in the performance ratings, the success rates are equally high – customers of all three providers can therefore rely on stable and mostly available broadband lines.



### Second and third places catch up

As in the previous year, Magenta wins the test among nationwide providers in Austria. While the front-runner maintains its very good result, the runners-up A1 and Drei make significant gains compared to the previous year – with third-placed Hutchison Drei achieving the greatest improvement.

KPI Values	Magenta	A1 Telekom	Hutchison Drei
<b>Download Speed Active [Mbps]</b>			
Ø Datarate	99.7	70.1	60.5
P10 Datarate	17.9	17.6	11.2
P90 Datarate	228.9	144.6	130.1
<b>Download Speed Passive [%]</b>			
UHD Video Class	43.2	46.7	37.0
Bulk Download	11.5	12.5	10.4
<b>Upload Speed Active [Mbps]</b>			
Ø Datarate	30.5	23.6	19.7
P10 Datarate	10.9	9.3	6.2
P90 Datarate	53.1	44.3	35.6
<b>Upload Speed Passive [%]</b>			
HD Video Class	46.9	48.8	47.6
UHD Video Class	34.8	32.5	28.9
<b>Latency [%]</b>			
Standard Gaming Class	95.1	94.6	90.6
Highend Gaming Class	62.3	69.8	32.0
ULL Class	22.9	29.0	7.0
<b>Stability [%]</b>			
Transaction Success	98.9	99.0	98.7

Percentages are rounded to one decimal place and points rounded to integer numbers. For the calculation of points and totals, the accurate, unrounded values were used.

### Fight especially at the top

The active download measurements show a clear gradation in the average and the top values, while Magenta and A1 are on a par in the passive observations. A1 is ahead in terms of latency. The higher the requirements, the more points Drei misses out on in the respective categories.

## Magenta Telekom

With strong results in the download and upload categories, Magenta is the test winner among nationwide broadband providers.

In 2019, T-Mobile Austria, a wholly owned subsidiary of Deutsche Telekom, merged with the former Liberty Global subsidiary UPC. The resulting Magenta Telekom offers (V)DSL, cable and fibre optic connections. At the end of 2023, it supplied 669,000 broadband

connections in Austria, making it the second-largest fixed network provider there. According to its own figures, Magenta could reach around 1.6 million, or almost a third of Austrian households, with gigabit internet.

Magenta is ahead of its nationwide competitors in the down-

load and upload categories. In terms of latency, however, A1 Telekom performs better, and the gap between Magenta and Drei is more pronounced. In the stability rating, all three nationwide providers are on a par. In our active speed tests, Magenta delivered the highest peak values

in both the download and upload measurements. Magenta Telekom achieved the same score in this year's fixed network test as last year.

**connect VERDICT**  
**VERY GOOD** (895 Points)

## A1 Telekom

In a close race with Magenta, the Austrian market leader's broadband offering achieved a very good second place nationwide.

A1 Telekom, which was formed in 2010 from the merger of Telekom Austria and Mobilkom Austria, is the market leader in the Austrian fixed network. At the end of 2023, it counted over 2 million fixed-network lines and thus serves 2.8 million revenue generating units (RGUs) - here, for

example, internet and TV connections realised via the same line are counted separately. Its network is based on (V)DSL and a growing number of fibre optic lines.

A1 Telekom is just ahead of the test winner Magenta in terms of passively observed data rates for

downloads and uploads, which are orientated towards everyday requirements. In the active measurements focussing on peak performance, however, it falls slightly behind the first-placed company. In the latency measurements, A1 Telekom achieved the best result among the nation-

wide providers – the fact that A1 does not use broadband cable technology, which tends to be weaker in this respect, is likely to have an effect here. Compared to the previous year, A1 gained 36 points and is now only 5 points behind Magenta.

**connect VERDICT**  
**VERY GOOD** (890 Points)

## Hutchison Drei

The smallest nationwide fixed line provider in the Alpine republic has improved significantly compared to the previous year and this time achieved a 'good' rating.

In 2017, Hutchison Drei took over its competitor Tele 2 Austria, which until then had operated solely as a mobile provider. The latter's around 210,000 fixed-network customers at that time are the basis for third place in the nationwide fixed-network market share. The provider no longer publishes exact

figures, but states that its fibre-optic offering could potentially reach around one million households by the end of 2024 ('homes passed'). Drei is cooperating with ÖGIG (Österreichische Glasfaser-Infrastruktur-Gesellschaft), öFIBER and A1 in the expansion of fibre optics. While Drei keeps pace with the

other nationwide Austrian broadband providers in the stability rating, there is clear potential for improvement in other categories behind the leading duo of Magenta and A1. This becomes particularly evident in the latency rating – there is room for improvement in the demanding high-end gaming and

ultra-low latency classes. However: Compared to the previous year, Drei has improved by an impressive 86 points and thus receives a 'good' rating.

**connect VERDICT**  
**GOOD** (752 Points)

## Reliability

Magenta and A1 Telekom are also very close to each other when looking at the mandatory programme alone, excluding the optional test items.

The 'Reliability' chapter is not based on additional test points, but is rather a different look at the results of the various test categories. The analysis takes advantage of the fact that umlaut distinguishes between 'Qualifier KPIs' (mandatory, so to speak) and 'Differentiator KPIs' (optional) for all KPIs. Providers that perform well in the mandatory programme deliver reliable services, regardless of any top performance in the optional programme.

In this evaluation, there is only one point between Magenta and A1 Telekom. However, the gap between Hutchison Drei and Magenta remains clearer.

Reliability	max.	Magenta	A1 Telekom	Hutchison Drei
Download Speed	247.5	227.5	228.2	216.9
Upload Speed	137.5	125.1	124.7	110.9
Latency	137.5	128.1	127.1	116.9
Stability	50.0	48.2	48.3	47.9
<b>Total</b>	<b>573 P.</b>	<b>529</b>	<b>528</b>	<b>493</b>

Percentages are rounded to one decimal place and points rounded to integer numbers. For the calculation of points and totals, the accurate, unrounded values were used.

# Austria: Regional Operators



**Honourable results for the regional providers in the Alpine republic: This time, our analyses show three very good operators.**

As already explained on page 76, we make the distinction between nationwide and regional providers not least for reasons of fairness: Providers that are only active in certain regions find it easier to achieve better results there on average. The overall scores achieved by the best providers in this category, Liwest and Kabelplus, are also higher than those of the nationwide winners in Austria.

Of course, interested parties can only book the offers that are actually available at their place of use – and must also take into account the tariff costs of the respective offers, which did not play a role in our purely technically orientated evaluation. However, the points achieved in the individual categories give a good indication of what customers of these three providers can expect overall.

## Different regional Footprints

To be able to compare the regional providers in Austria with each other, we have analysed their results independently of their respective ‘footprint’, i.e. coverage areas. Our additional case study conducted this year on the topic of coverage, which you can read on page 84, shows what these results look like.

The samples observed by umlaut confirm this: Liwest is primarily active in Upper Austria and the western part of Lower Austria, Kabelplus mainly in Lower Austria and Burgenland, while Salzburg AG supplies customers in most municipalities in the province of Salzburg and additionally in some regions around it.

umlaut has observed a relevant number of users or lines for Liwest in Lower Austria and Upper Austria, and for Kabelplus in Burgenland, Lower Austria and Vienna.

Salzburg AG is of course represented in Salzburg, but also with connections in Upper Austria, Styria and Tyrol.

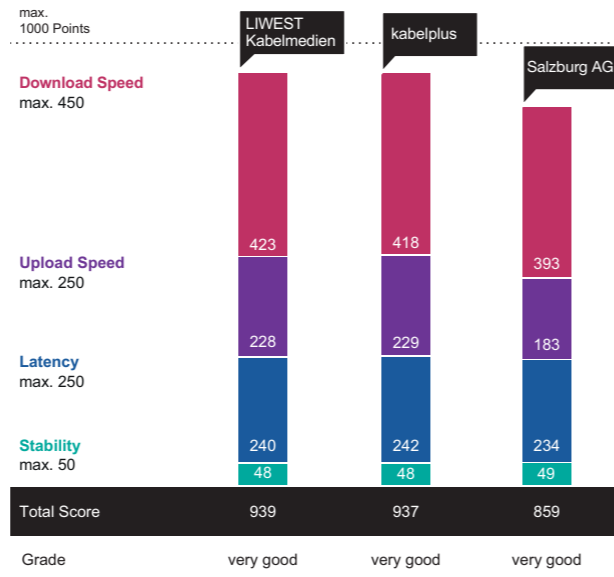
## All three regional providers are able to improve

The regional comparison in Austria is also interesting because three providers are competing here who supply a large proportion of their customers with broadband cable but are increasingly expanding their networks with FTTH fibre optics.

Liwest and Kabelplus are therefore in a neck-and-neck race, which Liwest wins by five points in the download category. Kabelplus is slightly ahead in the upload and latency categories. Salzburg AG, which also performed very well, fell behind the leading duo in the three categories mentioned. In the stability rating, however, this provider scored one point more than its two competitors.

As with the nationwide providers, the high scores in this category show that customers can rely on stable and mostly available lines.

Compared to the previous year, all three regional providers in Austria have improved – which is not a self-evident fact given the already high level of results. Salzburg AG achieved a ‘good’ rating in the previous year, but this time it is catching up with its ‘very good’ competitors.



Shown scores are rounded.

## Three times very good

Liwest wins the regional category by a gap of two points ahead of Kabelplus, which also scores very high. All three providers improved on their results from the previous year. In the case of Salzburg AG, the improvement leads to a leap over the points threshold to a ‘very good’ rating.

KPI Values	LIWEST Kabelmedien	kabelplus	Salzburg AG
<b>Download Speed Active [Mbps]</b>			
Ø Datarate	108.0	85.3	66.0
P10 Datarate	28.8	24.2	22.3
P90 Datarate	214.4	193.8	130.8
<b>Download Speed Passive [%]</b>			
UHD Video Class	52.0	50.6	48.6
Bulk Download	13.7	13.7	11.8
<b>Upload Speed Active [Mbps]</b>			
Ø Datarate	26.5	28.1	17.1
P10 Datarate	10.4	9.5	4.4
P90 Datarate	51.4	56.4	38.0
<b>Upload Speed Passive [%]</b>			
HD Video Class	41.1	59.1	43.5
UHD Video Class	48.0	47.6	40.4
<b>Latency [%]</b>			
Standard Gaming Class	98.9	97.9	98.2
Highend Gaming Class	88.7	88.8	83.6
ULL Class	36.1	48.5	28.4
<b>Stability [%]</b>			
Transaction Success	98.7	98.7	99.1

Percentages are rounded to one decimal place and points rounded to integer numbers.

For the calculation of points and totals, the accurate, unrounded values were used.

## Differentiation at the top

In the regional category, the three providers rank also quite close in terms of the basic requirements. The differences become more pronounced in the active measurements and in the higher performance levels – although Liwest and Kabelplus are only slightly ahead of each other here too, while the gap to Salzburg AG becomes more pronounced.

## Liwest

The provider, which operates in Upper Austria and western Lower Austria, achieved a very good result with high download data rates and first place in the regional ranking.

The company name reflects the three municipalities in which the cable provider was founded: Linz, Wels and Steyr. The company has since expanded its coverage area to include the whole of Upper Austria and western Lower Austria, where it claims to supply over 145,000 customers with TV, high-

speed Internet and landline telephony. Additional local networks are also being connected via franchise agreements.

Liwest is in a neck-and-neck race with the runner-up in the regional category, Kabelplus, which also specialises in broadband cable. The deciding factor

are the download data rates. Liwest achieved its lead in the active measurements focussed on peak performance. In the upload and latency categories, on the other hand, Liwest is just behind Kabelplus – but here too in a race at a very high level. In terms of stability, both providers score

on a par, but one point behind Salzburg AG. Compared to the previous year, Liwest improved by 35 points and climbed from second place to first place.

**connect VERDICT**  
**VERY GOOD** (939 Points)

## Kabelplus

In the neck-and-neck race with Liwest, Kabelplus comes in a close second – despite scoring higher in the upload and latency ratings.

The subsidiary of the municipal utility EVN AG offers broadband cable and fibre optic connections in Lower Austria and Burgenland. Kabelplus also claims to be the largest cable provider in these two Austrian federal states.

According to the company’s website, Kabelplus provides

more than 145,000 customers with TV, high-speed Internet and landline telephony. Kabelplus already offers FTTH in a growing number of municipalities.

In terms of download data rates, Kabelplus is five points behind the regional winner Liwest. Even with a one-point lead in

uploads and two points more in the latency rating, Kabelplus does not manage to fully close this gap. In the stability category, both providers are on a par (but one point behind Salzburg AG), meaning that Kabelplus scores just two points behind Liwest in the overall ranking.

With an increase of 26 points compared to the previous year’s result, Kabelplus has also improved significantly.

**connect VERDICT**  
**VERY GOOD** (937 Points)

## Salzburg AG

The provider active in the city and province of Salzburg does not quite keep up with the regional top duo in terms of data rates and latency, but also achieves a very good rating.

Salzburg AG is owned by the city and the federal state of Salzburg. In addition to energy, water and heat, the company also supplies internet, TV and telephone services. Under the brand name ‘CableLink’, it relies on broadband cable and fibre optic (FTTH). Its connections are

available in 116 of Salzburg’s 119 municipalities and also in Mondsee, Ausseerland and the Schladming area. The number of customers is likely to be well over 100,000 – in 2023, they would have ‘increased again’, according to the company – more precise information is not provided.

Salzburg AG scores one point ahead of its two regionally active competitors in the stability evaluation, but falls slightly behind in the other categories. This becomes more evident in the active measurements of download and upload data rates, which go to the limits of performance, than in

the passively observed throughput, which are more orientated towards everyday requirements. Compared to the previous year’s result, the provider gained 20 points and this time achieved a ‘very good’ rating.

**connect VERDICT**  
**VERY GOOD** (859 Points)

## Reliability

The separation of compulsory and optional test items shows the same ranking as in the overall ranking in the Austrian regional league.

The reliability rating only takes into account the KPIs that are required for everyday use and excludes the top achievements considered for further differentiation.

Liwest’s lead over Kabelplus in this mandatory programme and in the basic services is even somewhat clearer than in the overall regional ranking. Salzburg AG also achieved a very good third place in this analysis.

Reliability	max.	LIWEST Kabelmedien	kabelplus	Salzburg
Download Speed	247.5	236.0	233.0	231.4
Upload Speed	137.5	124.2	125.7	95.8
Latency	137.5	135.6	133.4	134.1
Stability	50.0	47.8	47.8	48.5
<b>Total</b>	<b>573 P.</b>	<b>544</b>	<b>540</b>	<b>510</b>

Percentages are rounded to one decimal place and points rounded to integer numbers. For the calculation of points and totals, the accurate, unrounded values were used.



# Switzerland: Nationwide Operators



Two outstanding providers are battling it out for the top spot in Switzerland. In a competition at the highest level, Swisscom wins the race.

Only two of the Swiss fixed network operators fulfil our criteria for nationwide candidates: Swisscom and Sunrise. Both offer their fixed network products practically throughout the whole of Switzerland. The figures from the Federal Communications Commission ComCom confirm this classification: at the end of 2023, Swisscom had a 46.5 per cent market share of Swiss fixed broadband connections, while Sunrise held 27.5 per cent. The providers following in the statistics are the network operators Salt (5 per cent market share) and Quickline (4 per cent), which we classify as regional providers.

In Switzerland, operators that also offer their lines in smaller communities and rural regions should not be grouped together with regionally focussed competitors for reasons of fairness.

Unlike in Germany and Austria, even connections with a nominal data rate of 10 Gbps are available in the Swiss fibre optic network. All providers participating in our test, both nationally and regionally, have such connections in their product ranges – albeit with quite different regional distributions. This also becomes clear in our case study on coverage, page 84 – as well as from the distribution of the samples collected by umlaut, which underline the respective coverage areas of the providers and thus our categorisation into the nationwide or regionally focused network operator category.

However, the fact that 10 gigabit lines are represented in the analysed samples is one of the explanations for the overall very high performance level.

## Neck-and-neck race at the highest level

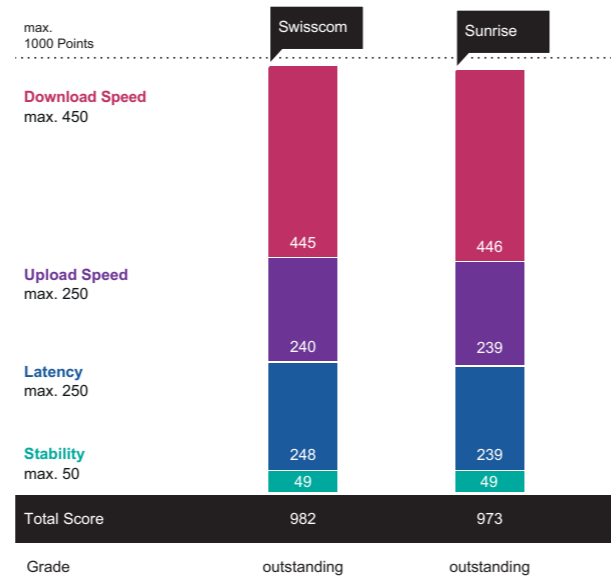
As already known from our mobile network tests, the competition of the Swiss broadband providers also takes place at the highest level: All five network operators surveyed this year achieved the rarely awarded rating of “outstanding”.

A look at the individual categories shows how close the race was in the nationwide group – although Swisscom secured a nine-point lead over Sunrise in the overall ranking.

Sunrise even scored one point more than Swisscom in the download category. The upload category, in which Swisscom is one point further ahead, equalises the score.

The latency rating is therefore decisive for the overall result: In the more demanding latency categories of high-end gaming (max. 20 ms) and ultra-low latency (max. 10 ms), the distance between the two competitors becomes increasingly clear. The points scored here are at a high level that is only achieved by the best representatives from the regional category among the Austrian providers. Swisscom clearly wins the test in the nationwide category with a nine-point lead in this discipline.

In terms of the success rates of Internet transactions, Swisscom and Sunrise are also exactly on a par for the KPI value – with 49 out of 50 possible points, the results here are also outstanding. Broadband connections in Switzerland are not only fast, but also very stable.



## Twice outstanding

The high scores and the rare grade of ‘outstanding’ for both nationwide providers demonstrate the extremely high overall level of performance in the Swiss fixed network. Swisscom crossed the finishing line with a nine-point lead.

KPI Values	Swisscom	Sunrise
<b>Download Speed Active [Mbps]</b>		
Ø Datarate	220.2	278.5
P10 Datarate	39.9	44.6
P90 Datarate	538.8	617.7
<b>Download Speed Passive [%]</b>		
UHD Video Class	53.0	52.7
Bulk Download	17.8	14.7
<b>Upload Speed Active [Mbps]</b>		
Ø Datarate	117.9	112.1
P10 Datarate	28.7	24.1
P90 Datarate	230.0	225.2
<b>Upload Speed Passive [%]</b>		
HD Video Class	46.5	48.8
UHD Video Class	35.4	40.3
<b>Latency [%]</b>		
Standard Gaming Class	99.5	99.2
Highend Gaming Class	94.0	85.0
ULL Class	72.1	36.0
<b>Stability [%]</b>		
Transaction Success	99.3	99.3

Percentages are rounded to one decimal place and points rounded to integer numbers. For the calculation of points and totals, the accurate, unrounded values were used.

## Demanding duel

The fact that Sunrise is often ahead of Swisscom in individual categories is further evidence of the overall high level at which the competition between the two nationwide Swiss broadband providers is taking place.

# Swisscom

With a lead of nine points over Sunrise, which Swisscom achieves in the latency evaluation, the provider wins the nationwide test and is rated “outstanding”.

In spring 2024, Swisscom reported that it served just under two million fixed broadband connections. According to the regulatory authority ComCom, this corresponds to a market share of 46.5 per cent – making Swisscom the undisputed market leader in the Swiss fixed network.

The provider’s product portfolio ranges from (V)DSL to fibre optics, whereby the latter lines are available with connection

speeds of up to 10 Gbps. 1.5 million customers also receive TV services from Swisscom. Swisscom aims to reach 57% of households in Switzerland with fibre optic (FTTH) lines by 2025 and between 75 and 80% by 2030.

The stability evaluation shows a success rate of 99.3% in the crowdsourcing analyses carried out by umlaut – an excellent value. In a direct duel with Sunrise,

another ‘outstanding’ competitor, Swisscom scores one point behind in the download category and one point ahead in the upload category. This race at the highest level is finally decided in the latency rating, in which Swisscom leads by nine points.

This also corresponds to the gap in the overall ranking, with which the provider won the test in the nationwide category in Switzerland.

Swisscom lost one point compared to its previous year’s result, but this ultimately means that the provider was able to maintain its very high level of performance in practice.

**connect VERDICT**  
**OUTSTANDING** (982 Points)

# Sunrise

Sunrise also achieved excellent results in the competition at the highest level, coming in second in the country with an ‘outstanding’ rating.

In November 2020, Sunrise and UPC merged under the umbrella of the parent company Liberty Global. Since spring 2022, they have been jointly offering cable connections and fibre optic lines (FTTH) under the Sunrise brand. This offer also extends into the 10 gigabit class. With around 1.26 million fixed network customers (as of June 2024), the company has a market share in the fixed broadband network of

around 27.5 per cent – ComCom confirms this figure. This makes Sunrise the number two in the Swiss fixed network market. The company has around 1.26 million revenue generating units (RGUs) for TV connections.

Sunrise shares the success rate of 99.3 per cent across all crowdsourcing measurements with Swisscom. In terms of download data rates, Sunrise is one point ahead of Swisscom,

while Swisscom scores one point more for uploads. Sunrise falls further behind Swisscom in the latency category. The higher the requirements become here, the greater becomes Swisscom’s lead – this is particularly evident in the most demanding class ‘Ultra-Low-Latency’ (max. 10 ms). In turn, Sunrise overtakes its competitor Swisscom by one point in the separate reliability analysis (see below).

Despite finishing behind the test winner, Sunrise also achieved an outstanding overall result. Compared to its score last year, this provider was able to improve by two points.

**connect VERDICT**  
**OUTSTANDING** (973 Points)

# Reliability

In terms of the separation of compulsory and optional test items, Sunrise scores ahead of Swisscom by just one point.

In the ‘Reliability’ assessment, umlaut analyses the crowdsourcing results solely with regard to the mandatory programme (‘Qualifier KPIs’ – what is necessary in everyday life?). The optional programme (‘Differentiator KPIs’ - which top performances serve to differentiate?) is not included here.

In this analysis, Sunrise leads ahead of Swisscom by one point. While the leads in downloads and uploads described above are also evident here, the gap in the latency score, when reduced to basic requirements, closes more sharply. In terms of stability, both providers are equally strong here too.

Reliability	max.	Swisscom	Sunrise
Download Speed	247.5	242.7	245.3
Upload Speed	137.5	131.3	129.9
Latency	137.5	136.5	135.9
Stability	50.0	48.8	48.9
<b>Total</b>	<b>573 P.</b>	<b>559</b>	<b>560</b>

Percentages are rounded to one decimal place and points rounded to integer numbers. For the calculation of points and totals, the accurate, unrounded values were used.



# Switzerland: Regional Operators



The race among the Swiss regional providers is also taking place at an impressive performance level. Salt clearly wins it.

With around two million customers and a market share of 18 per cent according to ComCom, the provider Salt may be number three in the Swiss mobile telephony market, but it definitely counts as one of the big Swiss mobile communication big players. The situation is somewhat different in the fixed network market.

With 'Salt Fiber', the provider only offers 10 Gbps fibre optic lines and with this offer achieves a market share of five per cent according to ComCom. However, as Salt's presence shows large gaps when looking at the country as a whole, we assign Salt's fixed network offering to our regional category.

This applies in any case to Quickline, which has a market share of four per cent according to ComCom. The provider Netplus (see right-hand side) clearly belongs to the regional segment as well.

In addition to the customer figures and market shares, this is also confirmed by the number of samples collected by umlaut as part of its crowdsourcing – see our case study on coverage on page 84.

As in Austria and Germany, prospective customers have to choose between the providers that are available at their intended location when looking for a landline connection. While the coverage areas of Salt and Quickline overlap to a certain extent and include at least some locations in French-speaking Switzerland, Netplus is almost exclusively active in Western Switzerland, specifically in the cantons of Bern, Jura, Neuchâtel, Fribourg, Valais, Vaud and Geneva.

Once again, we would like to point out that our purely technical performance evaluation does not take into account the tariffs offered by the

providers. However, our test results provide a good indication of what prospective customers who opt for a more powerful fixed broadband offer in particular can expect in terms of performance from the individual providers.

### More fiber is better

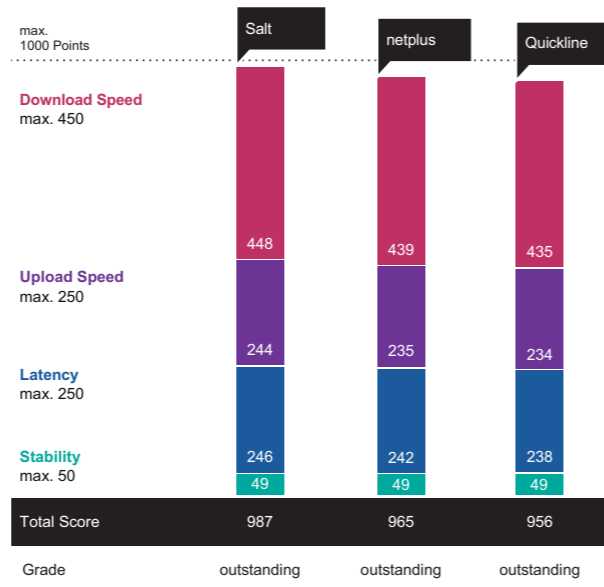
A look at the detailed results shows what it actually means to only offer FTTH lines with 10 Gbps: ten per cent of the measured values ('P90') are above 722 Mbps at Salt. In such dimensions, the respective WLAN connections on site could also have a small braking effect.

However, the values for Quickline and Netplus, which also have classic DOCSIS cable connections in their product ranges in addition to FTTH, are also impressive.

In the latency ratings, on the other hand, higher fibre optic shares definitely bring an advantage. This can be seen particularly impressively at Salt, where 68.2 per cent of all recorded samples still belong to the highest latency class 'Ultra-low Latency' and therefore have a maximum ping time of 10 ms.

At Netplus and Quickline, these values are more in line with those of broadband providers in other countries – the proportion of fast 10 gigabit fibre optic connections is likely to be significantly lower for them, as our case study on page 84 also indicates.

Another reason for Swiss customers to be happy: As in the nationwide ranking, the regionally focussed providers also achieved an outstanding 49 out of 50 points in the stability category.



### Also outstanding three times regionally

Salt leads the regional category by a clear margin of 22 points ahead of Netplus. The regional alliances Netplus and Quickline are again nine points apart. All three regional providers clearly exceed the threshold for the rarely awarded overall grade 'outstanding'.

KPI Values	Salt Mobile SA	netplus	Quickline
<b>Download Speed Active [Mbps]</b>			
Ø Datarate	331.2	167.8	149.1
P10 Datarate	53.0	42.4	39.3
P90 Datarate	722.2	360.6	315.8
<b>Download Speed Passive [%]</b>			
UHD Video Class	52.7	50.4	50.4
Bulk Download	17.5	14.2	15.5
<b>Upload Speed Active [Mbps]</b>			
Ø Datarate	171.7	94.1	78.5
P10 Datarate	33.9	15.1	14.3
P90 Datarate	347.8	260.3	175.6
<b>Upload Speed Passive [%]</b>			
HD Video Class	43.6	44.8	54.5
UHD Video Class	37.9	38.6	42.1
<b>Latency [%]</b>			
Standard Gaming Class	99.1	99.2	98.5
Highend Gaming Class	89.1	86.1	84.1
ULL Class	68.2	41.3	36.4
<b>Stability [%]</b>			
Transaction Success	99.3	99.2	99.4

### Top performances throughout

A look at the individual results reflects the overall high level of performance. The high maximum data rates in the active measurements and very high percentages in the highest latency class secure Salt the overall regional victory.

**Salt** At Salt, fixed broadband connections are only available as fibre optic lines with 10 Gbps. These lines deliver top results and make the provider the regional test winner.

Since 2018, Switzerland's third-largest mobile provider has also been offering fixed fibre optic connections with partners such as SFN (Swiss Fiber Net). Only lines with 10 Gbps are available – they are offered in most major cities in Switzerland. At the time of going to press, Salt had

220,000 fixed network customers; ComCom estimates its market share in the fixed network at five per cent. Its focus on the FTTH upper class is paying off for Salt: The provider has taken the lead in download and upload speed measurements – the peak values

(P90) for actively measured data rates are particularly impressive. Salt also achieved the highest score among the Swiss regional providers in the latency rating – especially in the demanding 'Ultra-low Latency' class. In the score for stability, all Swiss fixed network providers are on a par.

In the overall ranking, Salt achieved the same score as in the previous year – but this is already clearly in the top range.

**connect VERDICT**  
**OUTSTANDING** (987 Points)

**Netplus** This time, the association of eleven regional network operators from French-speaking Switzerland took second place in the regional ranking and received an 'outstanding' rating.

Netplus.ch AG is an association of eleven regional networks from the cantons of Fribourg, Vaud and Valais. The connections are based on broadband cable and fibre optic technology (FTTH).

The company has around 220,000 customers, making it the leading provider in French-

speaking Switzerland according to its own information – although this figure does not differentiate between Internet, fixed-network telephony, TV and mobile telephony. ComCom does not report the exact market share. So in any case, it is below four per cent.

In the download measurements, Netplus scores four points ahead of Quickline, while Netplus scores one point more for uploads. Netplus also achieved consistently higher values than Quickline in the actively determined data rates. The same applies to the latency rating,

where Netplus is four points ahead of Quickline. The second place among the Swiss regional providers was secured by Netplus, which improved by 13 points compared to the previous year – and thus earned the rating 'outstanding' this time.

**connect VERDICT**  
**OUTSTANDING** (965 Points)

**Quickline** The network of 22 regional partners came third in the regional ranking and also received the grade 'outstanding' for its performance.

Quickline is an association of 22 regional network operators and energy suppliers. It supplies its 181,000 broadband internet customers with cable and fibre optic connections (FTTH) and also offers 10 Gbps fibre lines. It also delivers landline telephony, TV and mobile communi-

cations services to its customers. ComCom reports a four per cent fixed broadband network market share for Quickline. In the measurements of download data rates, Quickline scores four points behind Netplus and 13 points behind Salt. In terms of uploads, the gap to Salt is ten

points and to Netplus only one. In the latency rating, Quickline scores eight points behind Salt and four points behind Netplus – again, the differences become most evident in the demanding 'Ultra-low Latency' class. In the stability category, KPI is slightly ahead of its competitors, with

the same score. Quickline has improved by four points compared to its previous year's result.

**connect VERDICT**  
**OUTSTANDING** (956 Points)

**Reliability** When reduced to basic requirements, the regional assessment shows the same ranking as the overall evaluation.

As with the nationwide evaluation of the basic requirements or 'Qualifier KPIs', the same analysis also shows in the regional category that the strong Swiss fixed network providers achieve their lead not only with top performances – but also grounded in the mandatory category.

Salt thus also maintains its clear lead in the reliability ranking. The gap between Quickline and Netplus narrows down to two points here – both regional networks also show outstanding results in this category.

Reliability	max.	Salt Mobile SA	netplus	Quickline
Download Speed	247.5	245.9	243.5	241.9
Upload Speed	137.5	132.9	126.4	126.9
Latency	137.5	135.9	136.0	134.7
Stability	50.0	48.8	48.7	48.9
<b>Total</b>	<b>573 P.</b>	<b>564</b>	<b>555</b>	<b>553</b>

Percentages are rounded to one decimal place and points rounded to integer numbers. For the calculation of points and totals, the accurate, unrounded values were used.



# Case Study: Coverage

We also analysed the geographical availability of broadband connections for the two Alpine countries in preparation for future developments of our test.

We are also planning to include the geographical availability of the respective connections in our assessments for Austria and Switzerland in future. As part of a 'case study', umlaut is therefore investigating what results the analysis tools used for this purpose can deliver.

Even at first glance, the maps on the right-hand side confirm what lies behind the distinction between nationwide players and regionally active broadband providers: If a broadband provider supplies customers more or less in the whole country, this is much more complex and inevitably leads to the effect that the statistics on a very large number of users also include connections with lower bandwidths. In connect's opinion, throwing such network operators together with regionally focussed providers that concentrate their roll-outs only on certain cities or regions and may be able to deliver faster lines there would simply be unfair.

## Super tiles as a basis

How the results of the analysis presented here will be incorporated into the overall evaluation will be part of the further development.

In the following, we first want to present how the according results are determined in principle: The basis are the 2x2-km tiles ('evaluation areas') also known from our mobile network test. We combine 8x8 of these into a 'super tile'. Background: As a

result of our crowdsourcing approach, providers with a small market share are also represented in smaller numbers among users. In order to achieve reliable results even with a small number of customers, we have therefore selected relatively large tiles. If there is at least one subscriber connection of the respective provider in the area of a super tile, it is shown on the map and included in the count. For Austria, the number of super tiles totals 544, of which 526 are inhabited or built on. In Switzerland, we count 268 super tiles, of which 254 represent inhabited or built-up areas.

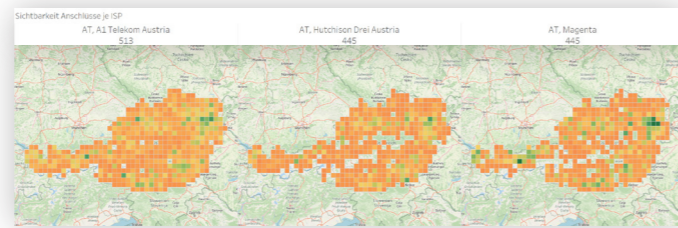
## Even higher bandwidths in Switzerland

For each subscriber connection, we also take into account the highest download data rate determined during the observation period. These maximum download data rates across all super tiles serve as an indicator of the degree of coverage and the availability of high-bit-rate services.

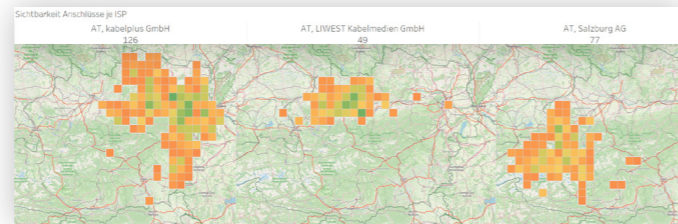
The maps on the right-hand side show the results for both countries during the evaluation period of our test. In Switzerland, we also identified connections with bandwidths of over 1 gigabit/s: The blue tiles in the lower two maps show where such connections are geographically available.



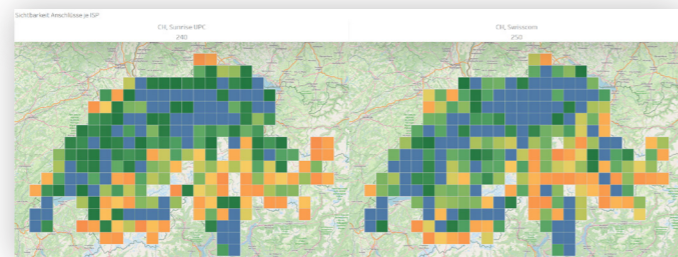
The faster, the greener: The color scale represents the maximum data rates achieved in the maps below.



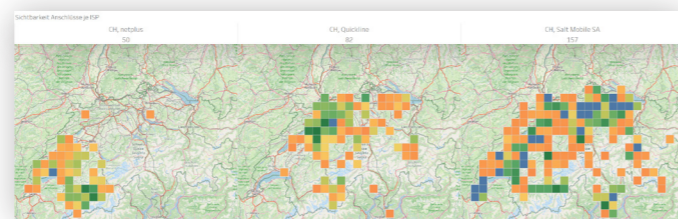
**Big players:** A1 (left), Magenta (centre) and Drei (right) provide broadband connections to large parts of Austria. It is clearly visible that gigabit lines are mainly found in large cities such as Vienna, Graz, Salzburg and Innsbruck.



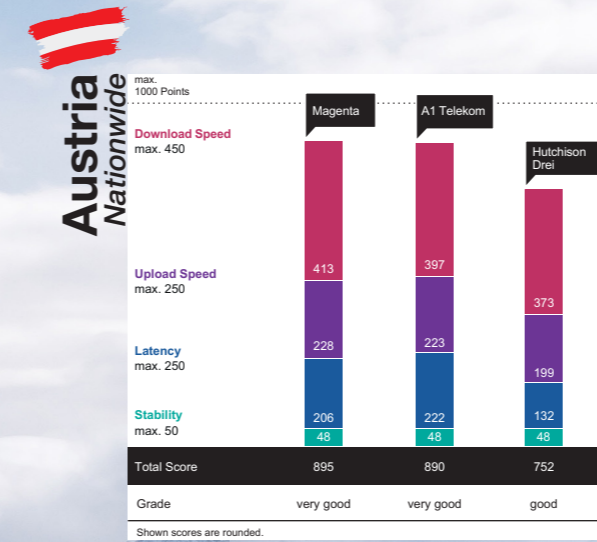
**Regional league:** Kabelplus (left), Liwest (centre) and Salzburg AG (right) are clearly concentrating on their respective expansion areas. Here too, connections with gigabit data rates can be found primarily in the largest cities.



**Neck-and-neck race:** The coverage maps of Sunrise (left) and Swisscom (right) are very similar. Blue-coloured super tiles represent areas in which umlaut has registered data rates above 1 Gbps.



**Only in certain cantons:** The geographical coverage of Netplus (left), Quickline (centre) and Salt (right) is significantly less than that of the nationwide providers. Here too, blue stands for data rates above 1 Gbps.



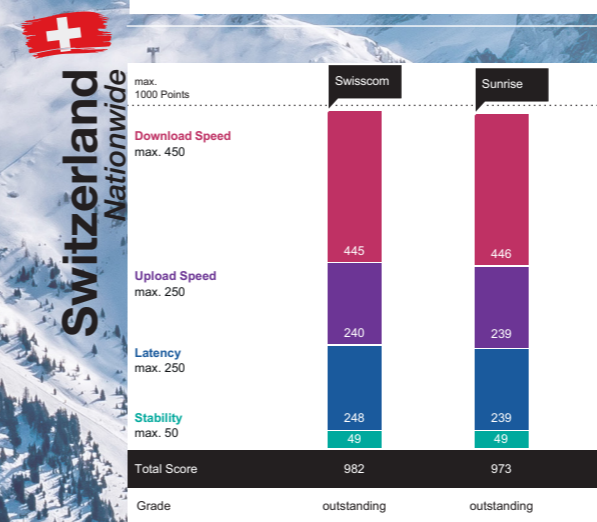
Overall Results	max.	Magenta	A1 Telekom	Hutchison Drei
Download Speed	450	413	397	373
Upload Speed	250	228	223	199
Latency	250	206	222	132
Stability	50	48	48	48
<b>Total</b>	<b>1000P.</b>	<b>895</b>	<b>890</b>	<b>752</b>

Percentages are rounded to one decimal place and points rounded to integer numbers. For the calculation of points and totals, the accurate, unrounded values were used.



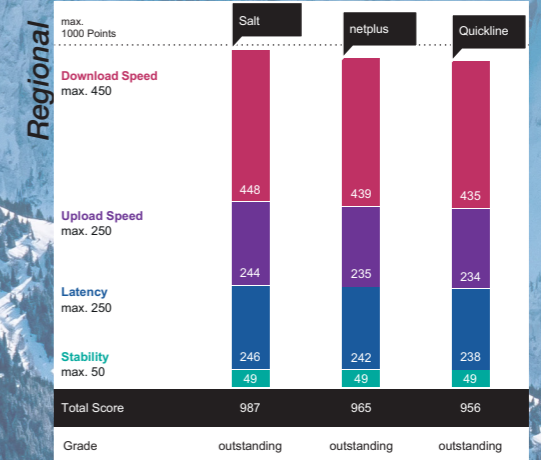
Overall Results	max.	Liwest	Kabelplus	Salzburg
Download Speed	450	423	418	393
Upload Speed	250	228	229	183
Latency	250	240	242	234
Stability	50	48	48	49
<b>Total</b>	<b>1000P.</b>	<b>939</b>	<b>937</b>	<b>859</b>

Percentages are rounded to one decimal place and points rounded to integer numbers. For the calculation of points and totals, the accurate, unrounded values were used.



Overall Results	max.	Swisscom	Sunrise
Download Speed	450	445	446
Upload Speed	250	240	239
Latency	250	248	239
Stability	50	49	49
<b>Total</b>	<b>1000P.</b>	<b>982</b>	<b>973</b>

Percentages are rounded to one decimal place and points rounded to integer numbers. For the calculation of points and totals, the accurate, unrounded values were used.



Overall Results	max.	Salt	netplus	Quickline
Download Speed	450	448	439	435
Upload Speed	250	244	235	234
Latency	250	246	242	238
Stability	50	49	49	49
<b>Total</b>	<b>1000P.</b>	<b>987</b>	<b>965</b>	<b>956</b>

Percentages are rounded to one decimal place and points rounded to integer numbers. For the calculation of points and totals, the accurate, unrounded values were used.



**Hannes Ruegheimer**  
connect author

Despite the overall high level of performance in the two Alpine countries, many of the providers we tested were able to improve on their results from the previous year or at least maintain their level from last year's test. In Austria, Magenta and A1 Telekom are in a tight race, with Magenta ultimately coming out on top. Hutchison Drei could not quite keep up, but scored 'good'. Among the Austrian regional providers, Liwest comes in just ahead of Kabelplus, followed by Salzburg AG with a slight gap, but

also a very good result. In Switzerland, what connect readers already know from our mobile network tests is now repeated in the fixed network: The Swiss operators play in a league of their own, with five 'outstanding' scores. In this competition at the highest level, Swisscom wins nationwide ahead of Sunrise, which is also very strong, while Salt is ahead on the regional level. But ultimately, all Swiss providers deliver top performances to their customers – depending on regional availability.



# Methodology **umlaut** Part of **Accenture**

With its crowdsourcing methodology, which is already familiar from our mobile network tests, umlaut also analyses performance KPIs of fixed network services.

The results of this test are based on a comprehensive analysis of crowdsourcing data carried out by the Aachen-based network test expert umlaut

## Fixed-Line Crowdsourcing

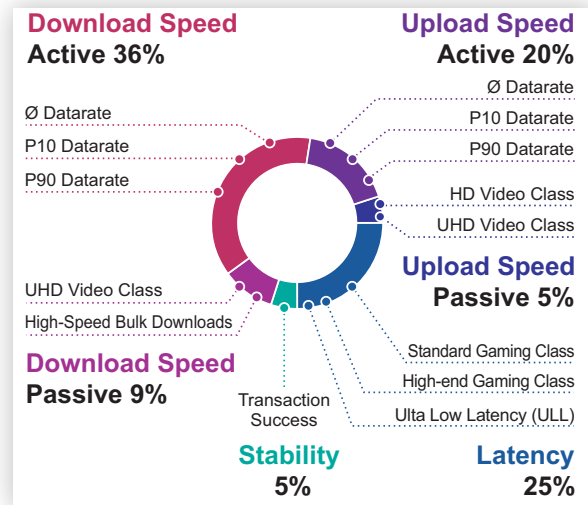
The data basis for the analyses is gathered on smartphones and tablets. The parameters described below are collected in the background when using thousands of popular apps – provided that the user has consented to the completely anonymous data collecting. Samples are generated at specific intervals (from one second to 15 minutes) and sent daily to umlaut’s cloud servers, where the data is further processed. By filtering the network access technology for samples collected during a Wi-Fi connection (as opposed to mobile network connections) and identifying the network operator, the samples can be limited to fixed network connections. A complex set of rules and extensive checks then ensure the validity of the evaluations. For example, conspicuously slow connections are filtered out – the threshold value is derived from the average performance of all lines observed in a country. The analysis of Wi-Fi connections takes into account the fact that most Internet connections today are used this way. Since the Wi-Fi speeds achievable with current smartphones are also usually significantly higher than the observed overall data rates, the influence of the Wi-Fi link speed on the measurement results is negligible.

## Passive Data Rates

The passive collection of *data rates for downloads and uploads* takes place in the background while the user is using everyday applications such as web browsing, streaming or gaming on their device. In order to classify the observed data rates, umlaut has defined application-related speed classes: *UHD Video* requires 20 Mbps and *High Speed Bulk Downloads* require 50 Mbps. In contrast, for the typically slower uploads, the speed classes *HD Video* (min. 5 Mbps) and *UHD Video* (min. 20 Mbps) are considered. *Passively observed download speeds* account for 9% of the overall result, while the according *upload speeds* contribute 5%.

## Active Data Rates

In addition to the passively gathered observations of the data rates requested by apps, *active measurements of the upload and download data rates* also take place once a month. They determine the amount of data that can be transferred in 3.5 seconds and derive the data rate from this. Our scoring considers the *average data rate*, the *P10 value* (90% of the values are above the specified threshold, a good approximation of the typical minimum speed) and the *P90 value* (10% of the values are above this threshold, a look at the peak values) for the determined measurements. The determined active download speeds account for 36% of the overall result, and the active upload tests contribute 20% to it.



## Latencies

Latency measurements are taken every 15 minutes by performing „pings“ directly after the connection tests. The first “hop“, which is affected by Wi-Fi, is deducted and thus corrected. umlaut also assigns the results of the latency determinations to an application-related class: Roundtrip times below 50 ms qualify a sample for *standard gaming* and less than 20 ms for *high-end gaming*. If the latency is shorter than 10 ms, the sample is counted as *Ultra Low Latency (ULL)*, which is sufficient for near-real-time applications. For each of the mentioned classes, our tables show the percentage of connections that reached or exceeded the required thresholds. The latency score accounts for 25% of the result.

## Stability

Based on the determined data rates and additional browsing and connection tests, umlaut also examines whenever a

## Balanced requirements

The recorded key performance indicators (KPIs) take into account both day-to-day basic requirements as well as peak values focused on higher performance.

broadband connection is available at all. The averaged and weighted results define the percentage of the Internet transaction success rate, which accounts for 5% of the total score.

## Reliability

umlaut divides all measured values into basic requirements (“Qualifier KPIs”) and values related to peak performance (“Differentiator KPIs”). The presentation of reliability takes only the “Qualifier KPIs” into account and thus allows us to make a statement about how well a provider’s network meets the purely basic requirements.