

Connection to data centres and the multicloud

The importance of carrier services for
business customers in Switzerland



Ein Unternehmen
der Stadt Zürich

ewz

Connection to data centres and the multicloud



The Zurich Municipal Electric Utility (ewz) not only supplies its customers with electricity; it also transports digital data. ewz links up Zurich's business world with its high-performance fibre-optic network, providing its customers with connections to data centres throughout Switzerland – and opening a gateway to the digital world and the cloud. Switzerland is an international hot spot for data centres.

Text: ewz
Images: Digital Realty

A new business has been growing in the greater Zurich area. The general public has barely noticed, but companies have already invested hundreds of millions of Swiss francs in it – data centres are booming.

Capacities in Switzerland are undergoing massive expansion

The company Green, originally founded in Switzerland and now owned by the French investor InfraVia Capital, has big plans: with an investment of 500 million francs, it's building a whole campus in Dielsdorf with a total of three data centres. One of them is going into operation in 2023. In 2022, Netherlands-based company Digital Realty (formerly Interxion) opened a third computing centre in Glattbrugg at a cost of over 200 million francs. The US company Vantage DC is currently building the first of four planned data centres in Winterthur and has already allocated 60 million francs. With this and a range of other projects, capacities in Switzerland are set for massive expansion in the coming months.



22 football fields: that's the total area covered by data centres in Switzerland

Roughly 100 data centres are already operating in Switzerland. A [study](#) from Q1 of 2021 by the company CBRE, a global leader in the commercial real estate sector, illustrates these developments to impressive effect.

The Netherlands is the only country in Europe with a higher density of data centres than Switzerland. Energie Schweiz, the federal government's central platform for energy efficiency and renewables, wrote in a report from February 2021: 'New players are rushing into the Swiss market, especially contractors for hyperscale companies. The hyperscalers aren't doing the building themselves so far. Instead, they rent or commission others to build for them, then act as the core customer.' A hyperscaler is a provider of IT resources based on cloud computing. Hyperscalers include Amazon Web Services, Microsoft Azure and Google Cloud. They have long moved beyond their original remits of online mail order company, software manufacturer and search engine operator. Instead, they open their computing centres to companies that use computing, storage and cloud capacities in return for payment. And ewz is also taking a new approach, by staking out space in data centres which it lets to fibre-optic customers so they can establish secure connections to cloud providers without having to maintain their own presence in a data centre. Data centres already cover at least 150,000 square metres in Switzerland – the equivalent of roughly 22 football fields.

The data centre industry has an estimated global turnover of 350 billion francs per year

There is a consistent trend towards these companies no longer assuming responsibility for the transport, processing and security of their data themselves.

The coronavirus pandemic further boosted digitalisation efforts. Companies are looking for new solutions for operating increasingly complex infrastructures. And they are outsourcing the attendant services because this area of operations is not their core business. So in a time when outsourcing of these areas is gaining in importance, the transport, processing and security of data is being handed over to external service providers.

Demand from companies remains high. This was seen in a [study](#) from data centre operator Digital Realty (formerly Interxion) issued in 2023. The cloud boom of recent years has seen requirements for on-premises data centres steadily declining. Applications run solely in proprietary data centres represent just 24.4 per cent of all applications (2018: 47.7%; 2021: 39.8%). And in comparison with earlier studies, the number of cloud providers that companies use is also increasing. The number of companies that use up to 10 different infrastructure-as-a-service providers has risen from 22.5 per cent (2018) to 60 per cent (2023). The increase in provider numbers is even more striking in the software-as-a-service segment; respondents with up to 10 providers rose from 15.8 per cent (2018) to 52.7 per cent (2023).

Switzerland: a secure data stronghold

There are good reasons why Switzerland has developed into a secure stronghold for data. Big data and cloud expert Diego Ortiz Yepes commented on the comparative advantage of Switzerland in an [interview](#), published by the Lucerne University of Applied Sciences and Arts: 'It's the same factors that made it a big financial centre. First, natural disasters like earthquakes that could damage data centres are rare here. Second, it's a highly politically stable country governed by rule of law. Third, it has an excellent national and international reputation as a place to do business.'

Data privacy laws in Switzerland are also much stricter than in, for example, the USA. US companies must disclose data at the request of local authorities – not so in Switzerland. But in September 2023, the revised Federal Act on Data Protection (FADP) came into effect in Switzerland, and it comes with obligations for operators of data centres. In some areas they are subject to additional provisions, particularly where data from the healthcare and financial sectors is concerned. And with practically every Swiss company processing data from EU member state residents, the EU's General Data Protection Regulation (GDPR) is also important for local businesses.

Diego Ortiz Yepes sums it all up: 'Swissness is attractive – and that goes for data handling, too.' Data centres like Digital Realty's in Glattbrugg are now classified as critical infrastructure by the federal government, which means they would be protected by the military in a crisis.

Roman Leiser, Head of Telecom Solutions Sales at ewz, thinks there's another reason for the data centre boom: 'It's not just about storing data in a data centre any more. Companies are getting more interested in peering – connecting peer computer networks for data exchange – and in high-performance access to cloud services. Major cloud data centres run by prestigious hyperscalers aren't just a US phenomenon – they're here in Switzerland as well.'

Leiser explains why the digital world is looking for these solutions with a simple example. 'If you Google the term "hyperscaler", the search query doesn't go to a data centre in the United States, it goes to the closest computing centre housing the cache server on which the searched index is stored. In Switzerland (in Zurich, for instance), these are only a few kilometres away. Spatial proximity, speed and capacity utilisation play a key role in the choice of the right data centre for transmitting the Google query.'

An important factor here is the latency: the delay caused by transport of the data, which increases over longer distances. Users barely notice the latency for a simple Google search. But latency can make the crucial difference between success and failure when it comes to data transfers in business-critical processes, such as high-frequency trading by financial institutions. Success can come down to the millisecond. And with more and more companies storing their data in the cloud, secure, latency-free access is also important – particularly for companies that don't have their own infrastructure in data centres.

Close to the customer

Data centres in Switzerland are geographically concentrated in two regions: Zurich and Geneva. Zurich is in sixth place in Europe, coming after Frankfurt, London, Amsterdam, Paris (four locations collectively called FLAP by experts in the field) and Dublin. There is one key reason for this: Switzerland hosts the registered offices of major banks, insurance companies and major service providers in the healthcare industry, all of which employ large numbers of people.

These companies want to keep their connections to data centres or the cloud geographically close to their business locations. Some data from the financial world and the healthcare industry is not even allowed to leave the country. For this reason, international cloud providers like Google, Oracle, Microsoft and Amazon were forced to establish a foothold in Switzerland to do business with companies that work with highly sensitive data.

Data centres are classified as critical infrastructure and are protected by the military in the event of crisis

Urs Hölzle, Senior Vice President for Technical Infrastructure at Google, explicitly emphasised this in March 2019 when the company started up the Google Cloud in Zurich. According to Hölzle, international customers with a location in Switzerland are particularly interested in the cloud. 'They benefit from a fast, global network owned by Google itself,' said the top Swiss computer scientist in an article published in the professional journal *Computerworld*.



Boom in cloud solutions

There is strong growth in demand for cloud solutions in Switzerland. The number of on-premises solutions is on a continual downward trajectory, with data increasingly moving to the cloud. With data volumes expanding at the same time and companies increasingly using multiple clouds, pressure on infrastructure is rising. Although clouds can be accessed via broadband internet, a direct connection via a data centre is the more secure option. And ewz.multicloud access from ewz is an optimal solution for Zurich companies.

Energie Schweiz believes computing centres will spread beyond the core areas of Zurich and Geneva in the future. For one, there's little land left for development in these areas. There also isn't enough electricity available, its report finds.

Digital Realty in Glattbrugg is a great example of the rapid development of data centres in recent years. This international company built an actual campus in Glattbrugg. Interxion chose the site because it is located directly by a fibre-optic network. Interxion first rented rooms in a former print shop 21 years ago and installed its servers there. Today, the company rents the whole building. The customer space comes to just under 7,500 square metres and energy consumption is five megawatts. In 2019, Digital Realty built its second computing centre right next to the first on its own land for 130 million francs. This centre has customer space of 6,600 square metres, an energy consumption of 12 megawatts, and is already fully let.

The largest data centre in Switzerland is 12,000 m²

In the immediate proximity is the third Digital Realty data centre, which opened in 2022 after an investment of over 200 million francs. With a usable customer space of 12,000 square metres, it is almost twice as large as the first two and has an energy consumption of 24 megawatts. This makes it the largest data centre in Switzerland by some margin. 'We've already sold half the space,' says Yves Zischek, Digital Realty's Managing Director in Switzerland. Other large data centre providers like Green, Equinix and the NTT Group are spending equally immense sums on building new infrastructure in the region.

Electricity consumption by data centres

The associated energy consumption is also starting to become conspicuous, with figures up to 118 to 190 megawatts in the greater Zurich region. However, these values are theoretical maximum capacities; as a rule, capacity utilisation is substantially lower. Across Switzerland, server rooms and computing centres, including specialised data centres operated by research institutions and businesses

in the finance, insurance and healthcare industries, collectively consumed 2.1 terawatt hours of electricity in 2019, according to an Energie Schweiz [report](#) published in April 2021. That's roughly equivalent to 3.6 per cent of Switzerland's entire energy consumption. And researchers expect this figure to double by 2025. The study assumes that an additional 800 megawatt of IT output will be installed throughout the country. That's more than the output of the nuclear power plants Beznau I and II combined.

It should be noted that these figures date from 2019. That means the most recent figures we have come from a period in which the major cloud providers hadn't yet set up shop in Switzerland, or had only just started operating. But with rapidly increasing demand for cloud solutions, we can expect to see an even greater increase in electricity consumption from Swiss data centres in the medium term. Numerous Swiss companies are currently in the process of migrating to the cloud, or are planning a switch to hybrid or multicloud models. Although they acknowledge a high existing awareness of energy efficiency issues, they outline additional measures that could offer potential for improvement of up to 46 per cent. Data centres have already implemented the measures recommended by experts: higher system room temperatures, separation of cold and hot aisles or enclosure of server racks, as well as IT measures like switching to flash storage, higher utilisation and the use of more efficient components. At the Digital Realty data centre in Glattbrugg, waste heat is made available to local residents free of charge.

ewz – an important regional player in data transport

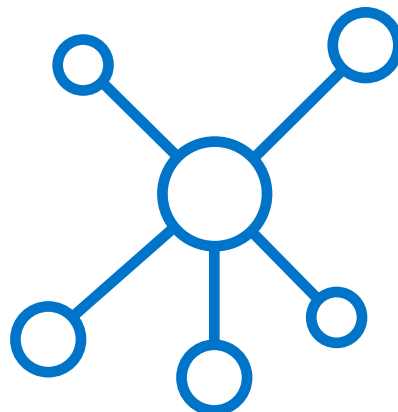
But a central data centre or cloud location alone is of no use to banks, insurance companies, online retailers, the healthcare sector and educational institutions like universities and other higher education providers. The data has to get from companies and service providers to one of the data centres or the cloud and be retrieved from it again – without interruptions or delays that could be disastrous for these businesses. The same goes for direct access to major clouds in Switzerland, because many companies still don't have their own infrastructure in data centres and instead use conventional broadband internet connections. Data centre operators themselves aren't responsible for transporting the data. Here, other specialists step in to fill the gap – with telecommunications companies at the forefront. Data transmission is the core business of these 'carriers'.

The Zurich Municipal Electric Utility (ewz) has developed a strong position in this sector over many years and, as a carrier with its own fibre-optic network, established itself as a notable player on the market.

ewz is well known as the major energy supplier for private customers in the city of Zurich and for business customers throughout Switzerland. The telecom unit is growing as a business in its own right within the company. At ewz, we made a name for ourselves among the general public as a telecom provider in 2007 when the people of Zurich approved an initial credit line of 200 million francs at the ballot box for the construction of a comprehensive fibre-optic network called ewz.zürinet.

Voters approved a second loan of 400 million francs in 2012. ewz completed this FFTH (fibre-to-the-home) infrastructure in late 2019, and 95 per cent of all real estate in the city – both private households and office and commercial buildings – is now connected to it.

In addition, ewz has been operating a fibre-optic network for business customers like banks, insurance companies, higher education institutions, the healthcare industry and internet providers for over 20 years. 'We offer connectivity, meaning the transport of data that needs to move from A to B or even to C,' says Roman Leiser. This means, for example, that banks can link their headquarters up with their branch offices. We also offer our business customers throughout Switzerland connections to data centres and now to the major clouds as well, through dedicated transmission lines with optional redundancy.



Any spot in the city of Zurich is now connected directly to computing centres all over Switzerland and to the clouds of the major providers

As a connectivity provider, ewz can rely on other advantages in this competitive market. It is owned by the city of Zurich, which guarantees stability – a change of ownership or merger with a private company is practically impossible for political reasons. It is well financed, making it a very safe investment. And ewz also has a key home advantage: our specialists are familiar with every building and street in the city. If problems crop up, they're nearby seven days a week, 24 hours a day.

ewz makes good use of a highly robust infrastructure

There's one thing data centre operators, telecom providers and ewz all have to guarantee: security. Only authorised parties can have access to the data. In addition, the data owners must be able to access their data at any time and without interruptions. Data centres guarantee availability of 99.99 per cent.

The centre operators only need to secure one building – the connectivity providers, on the other hand, must be able to guarantee the highest levels of security over long distances. ewz promises as much on its website: 'We get your data to the data centre and into the cloud securely and efficiently. Our connections from all over Switzerland to well-known data centres in and around Zurich and our expertise in end-to-end networking of company locations vouch for that.'

What exactly is this promise based on?

Within Zurich, ewz can exploit the infrastructure it has owned for some time, continuously enlarged as the city grew and always kept up-to-date. The foundations of this infrastructure are the power grid and its underground lines. The cables that transport high voltage current are laid within concrete blocks typically placed between 0.6 and 1.2 metres below the ground. This way they are protected from external threats like rodents and water erosion.

The fibre-optic infrastructure also runs through these blocks. The lines are laid deeper than those of other providers. ewz also runs fibre-optic cables beneath the power cables, resulting in very high physical security. This means that if an excavator accidentally rips open one of the channels in the concrete blocks during roadworks, the high voltage electricity cable will be damaged first. It would be impossible not to notice this. But the fibre-optic infrastructure would still be protected. 'This is a key asset that customers value,' says Leiser.



But for ewz, the data centres are not only customers, but partners, says Leiser. 'In bigger calls for tenders, we join forces with a data centre operator and submit a joint tender.' Leiser explains that ewz maintains an expansive network of partners including all data centres in the greater Zurich area. The search for the best solution for customers is always the highest priority.

A visit to Digital Realty

The heart of a data centre will be familiar from true crime series and thrillers: two rows of black racks stand in a narrow aisle. Diodes glow and blink in the racks, indicating that the servers are working. They buzz and whirr away, but not so loudly that two people can't still have a conversation. Cooling air protects the servers from overheating.

We're standing in one of dozens and dozens of server rooms in the Digital Realty (Schweiz) AG data centre in Glattbrugg. Most of these rooms can't even be accessed by employees. The row of servers in which we are standing is in a 'shared room': various smaller companies have installed digital computers here. One company has rented a larger portion of the room. Its computers are hidden behind thick, black steel sheets. Other companies occupy whole rooms.

The cloud providers operate their infrastructure in the data centres under the strictest security arrangements. There are no signs anywhere indicating who a rack of servers or a room belongs to. Not the slightest reference to the owners is to be found. The industry is discreet and secretive: you can be sure that banks and insurance companies store data in Glattbrugg – but which ones, no one will tell you. The only thing everyone knows is that the three big international tech giants on the data market – Google, Microsoft and Amazon – have direct cloud network access nodes with Digital Realty in Glattbrugg.

A series of airlocks must be traversed to reach the heart of the data centre. Even getting to the entry door requires passing two heavy, barred gates. At the entry gate, you already traverse the third airlock. The only way to continue from here is by the lift, which you can only use if you have a badge with an authorisation.

The corridor narrows at the last airlock, which grants access to the server rooms. No more than one person can fit through the passage at a time. Fingerprint identification is required for the airlock doors to open. You place the index finger of your right hand into a small opening. The system not only recognises your fingerprint, but detects your vital functions at the same time. It sounds rather macabre, but the upshot is that it would be impossible to continue past this point by using a finger that has been severed from an authorised person's hand. Data centres are not only exceedingly secretive, they also have immensely high security.

ewz offers high security through geo-redundant connections

The same principle of redundancy applies to both data transport as to the computing centres: everything necessary for operations is secured twice over. That means a data centre is connected to two different electricity providers. If one fails, the other steps in. If both fail, the system switches to batteries stored in the building itself. The batteries must bridge the short period of time until the diesel generators have started running and can supply the necessary energy to operate the servers as well as, for example, the cooling system – which is also redundant. The diesel generators are kept at a constant temperature of 40 degrees so they can be ready at short notice in an emergency.

Even if a fibre-optic cable were damaged in the ground because of construction work or other external influences in spite of all the security measures, the system wouldn't collapse. At the customer's request, ewz offers redundant infrastructure for this as well. 'Creating geo-redundancies is one of our strengths,' says Leiser. He explains that there are companies that even secure the fibre-optic cables with double redundancy, so that they are protected with a quadruple layer of security. Or they secure their data in two different data centres at the same time.

Everything is doubly secured

'With a geo-redundant design of data links, in-house installations and data transfer equipment, we offer our customers in and around Zurich availability of up to 99.99 per cent.' ewz itself relies on a solution like this: 'We have secured all municipal data in data centres operated by the OIZ (Organisation and Informatics, the IT Competence Centre of the City of Zurich) and purchase computing services from cloud providers.'

ewz's products

ewz offers diverse, customised solutions for digital networking. [ewz.fiber](#) is the ideal product for companies that want to operate their data network themselves and need maximum availability and a high degree of flexibility and independence during data transport. Companies lease a passive fibre-optic service from ewz with a high-availability, constant point-to-point fibre-optic link (dark fibre) that is documented in precise detail. Before handover, ewz performs an end-to-end final measurement of the effective cable length and attenuation values.

With ewz.fiber, companies choose their own network technology, bandwidth, protocols and security.

ewz goes one step further with [ewz.optical line](#). This high-value managed service provides the company with a high-performance point-to-point link through dedicated fibre-optic connections with very short latency. The layer 1 service is ideal for LAN and SAN connections, linking of company branch offices and connecting to data centres from all over Switzerland with bandwidths of up to 100 Gbit/s. To ensure that companies' data links are scalable and flexible, the platform is available with a diverse range of service types and a variety of transmission rates. Data is transferred transparently through dedicated fibre optics.

Our mission is to be able to offer all businesses in the city of Zurich a link to all data centres in Switzerland

On request, ewz.optical line can be combined with an encryption technology. [ewz.optical line secure](#) is based on the xWDM platform and high-performance AES-256 encryption which encrypts all of layer 1 in hardware without generating appreciable delay or additional overhead.

[ewz.LAN connect](#) is the perfect solution for efficient, flexible linking of two or more locations. This product is a managed Ethernet service on layer 2 and is available as a point-to-point link (e-line) or a multipoint-to-multipoint link (ELAN). The backbone of ewz.LAN connect is fully protected by redundancies. Dedicated links are used in the access area.

The latest product from ewz is the optimal solution for companies that don't have their own presence in a data centre: [ewz.multicloud access](#). This gives companies in the city of Zurich a direct connection to one or more cloud providers. This product is a managed layer 2 Ethernet service which offers access to both national and international clouds via a single connection. We also offer the layer 2 service with a redundant option. The backbone is fully protected by redundancies.

ewz's mission

ewz isn't about to stand still in this rapidly growing market. 'Our mission is to be able to offer all businesses in the city of Zurich a link to all data centres in Switzerland, whether these happen to be in and around Zurich or in Geneva,' says Roman Leiser. 'To achieve this, ewz uses its own fibre-optic infrastructure and supplements it with partner services where needed.'

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What you should know:



Switzerland is one of Europe's most important locations for data centres, and its capacities are constantly growing.



Switzerland benefits from national security and stability, from its outstanding reputation as a place to do business and from strict data privacy laws.



Data transport between companies and data centres is handled by specialist partners ('carriers') like ewz. These are particularly important in the high-performance business customer segment.



For almost 25 years, ewz has operated a fibre-optic network in Zurich, offering its customers secure, geo-redundant fibre-optic links to Switzerland's data centres.

We would be delighted to advise you on our fibre-optic-based telecom solutions and prepare a custom quote for you.

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