

DSL, fibre optics, LTE and cable – Internet connections explained

Aachen, Germany, 2 July 2024 – Nowadays, there are many ways to get online. Or, in other words: many kinds of Internet connections. What's more, trends like working from home and streaming entertainment are continuously raising the requirements on the available bandwidth. Let us explain the differences between DSL, cable, fibre optics and mobile phone services.

The topics of this press release:

- (V)DSL
- Fibre optics
- Cable
- Mobile phone services: LTE and 5G
- devolo: Get the most out of your connection

(V)DSL

DSL is the classic form of Internet connection. For DSL (Digital Subscriber Line), the existing copper phone lines are used. Thanks to technical advancements like VDSL (Very High-Speed Digital Subscriber Line), theoretical transmission rates of up to 300 Mbps are possible. Modern DSL contracts for household customers typically promise a maximum download rate of 100 to 250 Mbps – depending on the network expansion at the residence, of course.

The biggest advantage of DSL is the easy availability, since Internet connection via DSL is possible at nearly every property today without additional structural measures. However, the transmission rates with this technology are much more limited in comparison to other connection types. In addition, the performance ability of the connection depends heavily on how far removed the home DSL connection is from the nearest telephone company central office. The quality of the online connection can also fluctuate depending on the utilization of the local phone network.

Fibre optics

Fibre-optic connections are considered the current gold standard when it comes to high-speed Internet access. The connection takes place over the namesake fibre-optic cables instead of traditional copper cables. This makes the signal transmission much more robust and less prone to interference. The result is drastically increased transmission speeds extending into the two-digit Gbps range.

What transmission speeds are possible is strictly dependent on how expansive the local fibre-optic network is. In some locations, the fibre-optic connection may end at the nearest distribution box – while the "last

metres" up to the home router are still bridged using copper cables, which lowers the possible transmission rate. As a rule, a distinction is made between these three architectures:

- **FTTC (Fibre to the Curb):** The fibre-optic connection extends to the distribution box "at the kerb." After that, a slow-down due to bridging using telephone cables is noticeable.
- **FTTB (Fibre to the Building):** The fibre-optic connection extends into the building. There, either telephone or network cables are used. This means that the possible transmission rate depends on the cabling in the building.
- **FTTH (Fibre to the Home):** The fibre-optic connection extends seamlessly into the residential connection socket, thus enabling the fastest transmission.

The heavy reliance on the expansion of local infrastructure is the biggest weakness of fibre optics – because a fibre-optic connection does not automatically mean high gigabit speeds. However, fibre optics is generally considered the future of bandwidth connections.

Cable

The name of this type of Internet connection may be confusing initially – after all, cables are used in nearly all Internet connection types. But here, it means the use of TV cables. This connection type relies on the DOCSIS standard and theoretically allows for transmission speeds in the gigabit range.

Cable connections are most notable for their easy availability: If there is cable television in the home, in many cases, the line can also be used as an Internet connection. However, online connection via cable also has a tangible disadvantage: All connected households share the available bandwidth for both the Internet and television. Utilization thus varies throughout the day and noticeable speed losses can occur, especially during peak TV times.

Mobile phone services: LTE and 5G

State-of-the-art mobile phone networks with LTE or 5G achieve high enough transmission speeds to be suitable for a home Internet connection. LTE networks enable data transfer at speeds of up to 300 Mbps, and 5G networks can even transmit at gigabit speeds.

In practice, however, these theoretically possible speeds are not achieved consistently. For one, the networks are not equally developed everywhere. For another, mobile phone networks are very prone to interference. Mobile phone service is therefore primarily recommended as a backup solution, such as if Internet access fails temporarily. It only becomes a real alternative if other types of connections are simply not available in the home. The costs incurred should be checked closely in any case, as heavy use of high-speed mobile phone service is usually much more expensive than a conventional Internet connection.

devolo: Get the most out of your connection

When considering a residential Internet connection, one more thing must be taken into account: The bandwidth available in the home will not automatically reach terminal devices such as PCs, smart TVs or

game consoles without losses. A weak home network can even slow down broadband connections so much that video conferences and online streaming look like a slideshow. The German experts at devolo have a remedy, as they have been offering solutions for customised optimisation of home networks since 2002. [devolo Powerline adapters](#) and [Wi-Fi repeaters](#) enable the bandwidth to reach exactly where it is needed, both wirelessly and by cable.

Press contact

devolo solutions GmbH
Marcel Schüll
Charlottenburger Allee 67
52068 Aachen, Germany
Phone: +49 241 18279-514
marcel.schuell@devolo.de

This text and current product images can also be found at www.devolo.co.uk in the media section of the devolo website.

About devolo

devolo develops intelligent home networking solutions that send high-speed Internet into every corner of your house or flat. The main product for household customers is devolo Magic, a technology that makes it possible to establish smart networks over existing electrical wiring. The product portfolio is rounded off with innovative mesh Wi-Fi systems and solutions for fibre-optic connections.

In the professional sector, devolo is a reliable partner of international telecommunications providers, global industrial corporations, leading medium-sized companies and the fast-growing energy industry. Anywhere secure, high-performance data communication is needed, partners rely on devolo.

With over 50 million products sold, devolo belongs to the world's market leaders. More than 950 international top-product test reviews and distinctions underscore our leadership in innovation. devolo was founded in 2002 in Aachen, Germany, and is represented in more than 10 countries.