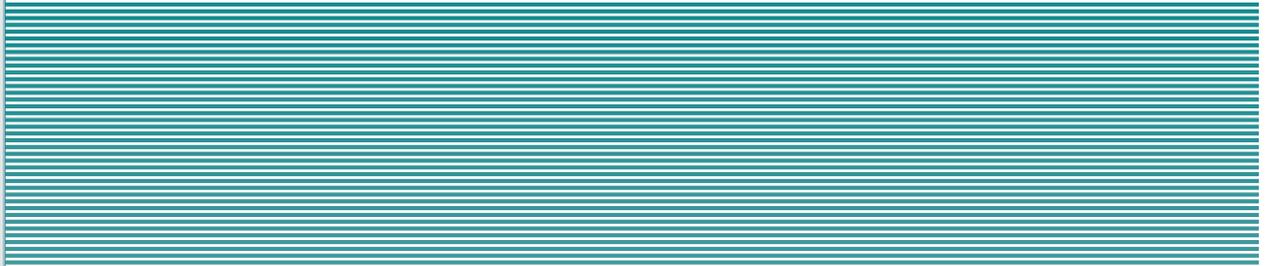




# Questions and answers on the topic 'Green VoIP'





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## Questions and answers on the topic 'Green VoIP'

### What does the term 'Green VoIP' actually mean?

Following the trend of the term 'Green IT', 'Green VoIP' is the technical term used to describe "green Voice over IP technology". This is a holistic approach used by the PBX industry to try to develop VoIP systems which go easy on the environment and resources during their entire life cycle. This starts with system design and includes production of individual components and system employment, and goes to recycling of devices. However power consumption is currently the focal point of Green VoIP. Telecommunication systems with low power consumption not only considerably reduce a company's and user's electricity costs; lower power consumption also translates into lower CO2 emissions.

### Which system is more energy efficient: a VoIP system or a conventional PBX?

It is rather difficult to compare power consumption as these two technologies need to be compared as a whole. It is not just the unit itself which needs to be analysed; power consumption across the entire telephone system should be analysed. Various factors have a large influence on power consumption: such as the user scenario, the size of the telephone system, respectively the number of subscribers and the pattern of use.

However, by all means VoIP systems often consume more energy than comparable conventional systems. The reason for this is that in a VoIP PBX the intelligence moves away from the central components to the user equipment and thus needs to

be replicated. Replication signifies multiple storage of data at various locations in order for the data to be available there. Due to this system architecture, more interconnecting switches or routers are required in VoIP systems, which in turn also increase power consumption.

In a direct comparison with conventional PBXs, VoIP systems from innovaphone are at an advantage thanks to their special product architecture which needs no server. Dependant on the user scenario and especially dependant on the number of interconnected locations and subscribers, companies can even reduce power consumption by migrating to VoIP. In general the rule is: the larger the number of company locations, the higher the advantage of innovaphone technology compared to conventional PBXs.

### Are VoIP systems power hungry compared to conventional systems?

This is a very controversial subject in many discussions. The analysis "power consumption of VoIP systems" which was published in May 2008 by the VAF Technical Committee (Federal Association of Telecommunication) examined power costs for conventional telephones, hybrid systems (50 percent conventional telephony and 50 percent voice over IP telephony), pure VoIP systems with hardphones and VoIP systems with softphones in small, medium and large enterprises. The result of the study acclaimed that standard telephone systems use the least electricity.

This study by the Federal Association for Telecommunication has however been criticised by



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several experts. The VAF analysis prompted the company ComConsult Technologie Information GmbH to make its own power consumption calculations for various PBX technologies. The consultant company criticises the VAF study for example in its assumption that IP telephony needs a separate network. In most cases IP telephony uses an already existing IT infrastructure for cost reasons.

Separating the networks only makes sense if it is necessary to increase failsafety. In contrast companies with conventional telephony have to cover the costs for both a LAN network and a telephone network. ComConsult also criticises and disagrees with another claim by VAF that stand-by mode is not possible for IP telephones. The study concludes that VoIP solutions with hardphones only use slightly more electricity than conventional solutions. The somewhat increased energy costs could however be compensated by typical VoIP cost saving effects (consolidation, homogenisation, simplified management etc.) Using softphones across the board could even reduce energy consumption for a VoIP solution by more than 90 percent compared to conventional TDM technology (Time Division Multiplex). Furthermore the study thus concludes that VoIP with softphones is the key approach to energy efficient PBX solutions.

### Which components play a role in determining power consumption?

In addition to the data network, companies using conventional telephone systems need a telephone network with dedicated cabling. Switches and Ethernet ports are installed in order to provide the network infrastructure. Therefore a central communication server and an uninterrupted

power supply (UPS) can be found in data centres in addition to the telephone system. Further components which play a role include the telephones on office desks.

In addition to the communication servers, VoIP systems with a conventional architecture need an additional server in the data centre, which acts as a telephone system. If necessary other components need to be set up such as UPS, fans and other infrastructure components such as routers, switches, firewalls and tape drives. Moreover either VoIP telephones are put on desks or employees use softphone functionalities over their computer and use a headset when making telephone calls.

The product architecture of innovaphone systems has one unique advantage: the solution does not need a server as the innovaphone PBX works on the autarkic hardware of the VoIP gateway.

### Which components are included when calculating the power consumption of a VoIP system?

It is difficult to make one sweeping statement on this topic as the existing system architecture (mostly networks and other components) is often used for other IT systems. Attributing components of a company network to IP based PBXs varies dependent on the user scenario and the pattern of use.



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### What possibilities do the individual VoIP systems provide to save energy?

Considerable energy cost savings can be achieved by making the right choice concerning server and network components in combination with intelligent operational concepts. Generally servers are the most power hungry component. There is cost saving potential however if a company uses a Blade Server. Whilst servers on average use 500 to 600 watt electricity per hour, the blade version reduces power consumption to below 200 watt per hour. Improved capacity utilisation for servers in data centres can further increase cost savings. Usually just 20% of a server's capacity is actually used. Companies can thus optimise their server structure to reduce energy costs. Capacity utilisation can be improved several times over through virtualisation. In doing so the server's resources are collected and divided. A server can then take on several tasks and for example be used as both a communication and a data server. This results in fewer servers doing the same work as many servers which haven't been optimised. A further approach to cut electricity costs is to replace VoIP telephones with softphones integrated into the computers.

The best energy balance is seen when a VoIP system does not include a real server but is based on an autarkic hardware platform, as is the case with the innovaphone PBX. The innovaphone PBX is equipped with a specific operating system which is functional and has been reduced down to the essentials thus needing an absolute minimum amount of energy.

### What potential savings do VoIP systems offer compared to conventional systems?

It is not sufficient to just look at power consumption in order to be able to judge whether a VoIP system is economically viable. Companies must conduct a holistic return-on-investment calculation. Internet telephony means employees can make telephone calls across the globe at a much lower cost than conventional telephony.

Additional advantages can be seen concerning scalability and flexibility. Any imaginable scenario can be realised easily in a company – from interconnecting individual home offices to complex scenarios in corporations with branch offices across the globe. Administration and maintenance are simple. Extension numbers can be set up without much effort. innovaphone solutions prevail above all others with their standard conformity which enables all VoIP devices to be incorporated from any manufacturer and which enable smooth migration when changing over from fixed line telephony to VoIP. Furthermore the systems guarantee exceptionally high availability.

### Why are innovaphone VoIP systems more energy efficient than other VoIP systems?

Most VoIP systems need a server, however servers tend to be power hungry despite the fact that low-voltage processors and modern virtualisation technologies are often implemented. This is not the case with innovaphone, as innovaphone's concept is not server based. The innovaphone PBX works on autarkic hardware of the VoIP gateway, therefore the solution does not need a ser-



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ver. Besides the energetically rather favourable product concept, there are two further factors in the innovaphone solutions which have a positive effect on energy consumption: On the one hand all components have been optimised concerning their power rating. Thus the innovaphone telephone system IP6000 (one single device for up to 2000 subscribers) uses just a fraction of the electricity (max. 10 Watt) that a conventional telephone system of a similar size would need. Another plus point: All components are PoE capable. PoE stands for Power over Ethernet and describes a method where network capable devices are powered over the Ethernet cable. In addition a separate network is not necessary to implement an innovaphone solution. Cooling is also not necessary as the innovaphone components are all cooled passively and thus do not require a fan.

efficient VoIP telephone systems currently available on the market.

### Conclusion:

There are three possibilities to increase energy efficiency in IT projects: reduce consumption, optimise infrastructure and use resources more efficiently. innovaphone is working on all three possibilities at the same time: power reduced components, scalability enabling resources to be used more efficiently and also infrastructure optimisation through the special product architecture.

### Are innovaphone systems more energy efficient than conventional telephone systems?

According to the analysis by the consultant company ComConsult, implementing softphones across the board can cut energy consumption for a VoIP solution by more than 90 percent compared to conventional TDM (Time Division Multiplex) technology. According to the study, innovaphone is also setting the standard concerning energy requirements: innovaphone makes the most energy

#### About innovaphone AG

The company was founded in 1997. From the very beginning innovaphone has played a decisive role in the development of IP telephony. Still today the company with approximately 60 employees is financed entirely with private funds. innovaphone does not develop hybrid solutions, but pure IP systems, which unite the security and high availability of conventional PBXs with the flexibility and scalability of IP.

The innovaphone PBX is the core of the solution portfolio. Companies of any size can be equipped according to their needs: from small companies over medium size companies with several branch offices to large enterprises. The innovaphone IP telephony systems are exclusively marketed by authorised distributors and resellers.

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