innovaphone

FAQs

... on the topics of security, availability and cost effectiveness of the innovaphone PBX

English

Topic: Security

"What are the main implications of the innovaphone PBX for our IT security architecture?"

Implementing the innovaphone PBX will normally provide companies with a considerable improvement in telephony security. Something many users are not aware of is that conventional telephone systems do not even usually have a dedicated security concept. Telephone systems are more likely to be treated as an autonomous "technology island", operating totally separately to the overall IT infrastructure. This is totally different with the innovaphone PBX: the very same IT security measures that are being successfully and safely used by the company for other applications can be applied.

This is why there are no fundamentally new security issues arising when the innovaphone PBX is introduced. On the contrary, it deals with exactly the same questions internal IT is facing anyway. The actual challenge is to apply the existing security architecture to the additional (voice) application. Assuming that a dedicated security concept is already in place.

The introduction of the innovaphone PBX therefore also presents an opportunity to rigorously check the existing security architecture and to close existing – technological or organisational/personnel-related security gaps. This is a serious issue for companies, as the security profile of its telephone solution obviously changes once it is operated as an application in the company network.

"Does the introduction of the innovaphone PBX heighten the risk of network attacks?"

If all security measures have been applied correctly and the network as such complies with the highest security standards, the introduction of the innovaphone PBX will not have any implications on the company's security architecture. Neither does the network become more vulnerable, nor is the telephone system exposed to a greater risk.

The highest security level is ensured if the innovaphone PBX is operated in the intranet domain, as this would mean that the IP telephone system is not at all accessible from outside. Theoretical risks remain such as unauthorised access from within the company, e.g. acts of sabotage. However, this is not specific to VoIP, but applies to all business critical applications. It is the responsibility of the company to adopt appropriate provisions.

The situation is different if the innovaphone PBX is to be linked via a SIP trunk. In this scenario, the application is available via the internet and thus theoretically vulnerable to attacks. Additional security measures are needed in such a specific case. However, if the system is configured correctly, the company remains efficiently protected against attacks.

The internal IT department would normally be able to configure the system without any external help. The company therefore largely controls the security of their telephone system – in contrast to conventional telecommunications solutions.

“Is the innovaphone PBX safe from manipulation and fraud?“

The risk of manipulation, for example with the objective to generate charges from outbound calls through so-called brute force attacks, should not be taken lightly. These involve attacks on a VoIP telephone system, where seriously criminal hackers use special software programmes to decode passwords in order to gain control over the system or to manipulate it. Subsequently, these may be used to generate chargeable service calls without the company’s knowledge.

Per se, VoIP systems like all other applications in a company network are freely accessible for everyone. This is why in principle all VoIP systems available on the market can be the target of such an attack if the company does not take reasonable measures to protect itself. This is in no way related to a failure on the part of the vendor, but results from negligence related to password management and network security. If the company’s VoIP security strategy is well-founded, it is safe enough to implement the innovaphone PBX.

In contrast to the management of other system components that are integrated into the company network, IT specialists often lack security awareness when integrating VoIP telephone systems. While companies already devote significant resources to establishing firewalls, virus scanners etc. in order to protect conventional network components against unauthorised access, when it comes to VoIP systems users are still often not sufficiently aware of potential security issues.

Every company can easily protect itself against external attacks. The innovaphone PBX is protected by a wealth of mechanisms. Hackers have virtually no chance if administrators and subscribers comply with normal practices in assigning passwords and network security.

“We have equipped our network with a firewall and an intrusion detection system. Does this have any implications on the use of the innovaphone PBX?”

Firewalls and intrusion detection systems are common tools that are usually used at the point of separating intranet and public internet. Security appliances like these obviously have no impact on the use of voice applications. Normally, these types of systems would already be in place before the innovaphone PBX is introduced.

As a general rule, innovaphone-certified specialised trade partners will be familiar with the usual range of security appliances and their combination with the innovaphone PBX. If in doubt, the appliance vendor and possibly the provider will be contacted to obtain the configuration settings needed to run the innovaphone PBX in a secure and undisturbed manner in this type of protected network environment.

“How vulnerable is the operating system of the innovaphone PBX with regard to malware? Does the innovaphone PBX need extra protection?”

The innovaphone PBX has a proprietary operating system, focusing only on essential functionality. This renders the system well-protected against malware attacks and users do not face the same concerns as with so-called general purpose operating systems such as Windows or Linux.

“Are voice and signalling data secure with the innovaphone PBX?”

All standard security features and corresponding standards have been implemented in the innovaphone PBX in order to guarantee maximum security for voice and signalling data. This takes the system to a security level that is far more sophisticated than that of a conventional telephone system.

Standard	Description
SIPS	Encryption of signalling data in SIP
H.235	Securing the integrity of signalling data in H.323
SRTP, AES	Encryption of voice data in SIP and H.323
HTTPS	Encryption of content in configuration, maintenance and computer telephony integration (CTI)
CHAP, MS-CHAP2, SHA-1, RC4 128bit, MD4, DES	Securing data transmission in the VPN
LDAPS	Securing replication data

“Which provisions do we have to put in place to prevent interception of our telephone calls?”

If the standard security measures with which the innovaphone PBX is equipped are applied correctly, it is impossible, as far as it is humanly possible to tell, to intercept telephone conversations held via this system.

Topic: Availability

“Which steps need to be taken in order to protect the innovaphone PBX in the event of loss of power?”

One of the innovaphone PBX’s special features is that all hardware-components can be run on power over Ethernet (PoE). The gateways as well as the end devices are supplied with electricity via the network. This is a clear advantage when we look at covering electricity needs in the event of a loss of power: the network would normally be secured through a UPS (uninterruptible power supply) system. It might be necessary to check in each individual case whether the systems are adequately dimensioned.

“What’s the voice quality like with the innovaphone PBX?“

High voice quality is vital for telephone systems to find acceptance, particularly in a company environment, and for good reason. Subscribers in countries equipped with digital ISDN networks are used to particularly high standards. The good news is: when a conventional telephone system is exchanged for an innovaphone PBX, subscribers will not have to make any compromises when it comes to voice quality.

On the contrary, implementing the innovaphone PBX will normally even boost voice quality considerably. This is due to the fact that the codecs responsible for transforming voice into data are much more powerful than those of conventional telephone systems. As such, double the voice frequency spectrum is available for the transmission of speech.

Moreover, innovaphone’s latest generation of high end devices is based on the new standard G.722.2, which is an optimised version of the voice codec G.722.1. With this standard, the voice quality is dynamically adapted to the available bandwidth, thus setting completely new quality standards with MOS values in excess of 4.5.

However, voice quality is not only determined by the VoIP system alone, but also by the state of the network. The network should therefore be prepared beforehand for optimum real-time voice transmission in order to prevent interruptions.

“What happens in the case of network outage – would our phone lines still be reachable?”

The redundancy concept as well as the unique product concept of the innovaphone PBX is designed to guarantee at least the same level of availability as offered by conventional telephone systems. As long as network (WAN, LAN) and electricity supply are designed for high levels of availability, the new system’s availability will comply with the company's usual requirements and should normally exceed the previous system's availability levels.

If there are special requirements in a security critical environment, it is possible to configure VoIP gateways in a way that companies can connect to the public telephone network via a local break-out point. This would ensure that the company is available even if there is a total network failure. It would also allow for emergency calls.

“H.323 or SIP: Which is the right standard for us?”

A point-to-point connection between two callers is needed for a telephone call to be established. This allows actual data such as voice or moving images to be transmitted. However, internet protocols (IP) are "connection-less". In other words: no connection is needed to exchange data.

As IP telephony works with internet protocols, additional session protocols are needed before a telephone call can be started, which also need to be terminated once the call has finished. Two protocols have emerged: H.323 and SIP (session initiation protocol).

The differences between the two protocols are not to be elaborated upon in much detail, only this much: H.323 originates from fixed network technology, while SIP stems from the internet world. H.323 is considered highly track-proven and robust, but SIP is simpler in its structure and easier to implement. At the end of the day, both protocols have advantages and disadvantages, and the decision as to which one is more fitting depends on the type of application.

However, it is irrelevant which standard will be used in the telephony environment for a company’s decision whether or not to buy the innovaphone PBX. innovaphone is the only provider in the market which is able to implement both convergence standard for all system components. The telephone system can therefore either be run under H.323 or under SIP, or under the two standards in parallel.

“Many of our employees work in the field or from their home offices. How can we integrate mobile subscribers into the innovaphone PBX environment?”

The innovaphone PBX provides companies with the opportunity to integrate home office staff in a particularly simple, elegant and secure manner. PPPoE allows home office workers to access the internet via a DSL connection, while the PPTP ensures a secure VPN connection to the company. The transmission of telephone calls is based on encrypted data and the system also deals with the authentication of external subscribers.

Integrating mobile end devices into the innovaphone PBX does not pose a problem. This applies to WLAN telephones as well as to IP-DECT devices and mobile telephones. Mobile staff can be reached via their personal direct-dial number on all end devices (one number concept). As a result, they can use all of the innovaphone PBX’s features.

The digital DECT technology is particularly sophisticated. Today’s requirements with regard to reach, voice quality and protection against interception are largely being met. In order to integrate this tech-

nology into the IP based telephone system innovaphone provides an IP-DECT system. Different DECT phones, designed for every individual field of application, are managed by the innovaphone PBX. They can be operated either separately or in parallel to other telephones.

It is also easily possible to integrate the innovaphone PBX into wireless networks. The IP62 phone, for instance, works with the PBX without a gateway, i.e. directly on the network, and offers all of the performance features expected from a desk phone. Telephones from other manufacturers can also be easily integrated into the system due to the implementation of standardised protocols.

From innovaphone PBX Version 8, the integration of mobile phone subscribers into the system is even more sophisticated. The call forking function allows incoming calls to be signalled to several numbers – also outside the PBX. The subscriber can now take the call from any telephone.

This function replaces traditional call forwarding and the parallel signal makes it much more convenient. The telephone numbers can be added successively via a timer, which can also be freely adjusted. As soon as the incoming call has been accepted on one of the phones, all of the other phones will stop ringing. Therefore, call forking can be switched on permanently. It is no longer necessary to enter call forwarding once you leave the office. You can also move about more freely in your own office, as you do not have to pay attention to the configuration of your phone.

“Fax machines are essential to our business. Can these devices be integrated adequately in the innovaphone PBX?”

Fax machines are an integral part of many office environments. However, they require an analogue connection. The same goes for a number of phones with special features such as explosion-proof casings or telephones adapted for subscribers with special needs. These analogue devices can still be used once the innovaphone PBX has been implemented.

innovaphone offers special IP adapters for this. Like the other components, the adapters have also been constructed without fans or other rotating parts, offering maximum fail safety. The power is either supplied via a central power supply unit or via Power over Ethernet (Class 3). The fax over IP protocol T.38 makes sure fax transmission is stable.

“We can’t afford a failure of our telephone system for an extended period of time. Does the innovaphone PBX guarantee that our customers can reach us 24/7?”

One of the innovaphone PBX’s special features is the sophisticated redundancy concept guaranteeing availability on a level with conventional telephone systems. Reliability is secured at three levels – hardware, system configuration and power supply.

With regard to the hardware, autonomous gateways without moving components such as hard discs or fans provide a robust platform for the innovaphone own operating system. The fact that the product architecture is not server-based already facilitates high availability of the innovaphone PBX.

Moreover, the innovaphone PBX can also be operated as a failover cluster. In this case, a second system is added to the active system as a standby. As a result, a failover is automatically initiated once the active system stops working and the standby system takes over.

Topic: Cost effectiveness

“What benefits will our company have from introducing the innovaphone PBX?”

Although migration is usually a smooth process, introducing VoIP has far-reaching technological, organisational and HR-related consequences with regard to the change in IT architecture, which a company should manage pro-actively. From a technology standpoint, telephony becomes an application run in the company network. The divide between the telecommunications sphere and the IT sphere is thus overcome with a common platform for data and voice communication.

This, in turn, has far-reaching consequences for the entire technical infrastructure including the related personnel and organisational structures and processes. This starts with uniform cabling and ends with bundling responsibilities for telephony and IT, which would usually have been separate in the past, in one department.

This convergence also requires a paradigm shift with regard to the perception of telephony. Migration cannot be reduced to a simple exchange of telephone systems. Actually, it opens the door to new and more efficient forms of communication – always assuming the company sets the right course in good time.

One of the essential differences in comparison to a conventional telephone system is that the concept of operations is no longer dictated by the system, but will be and needs to be designed according to the individual company's IT conventions. This especially applies to security and availability, where the same mechanisms will take effect that also influence all other applications.

The introduction of the innovaphone PBX therefore also results in a consolidation of the telephony landscape. The goal is to introduce a company-wide, homogenous infrastructure with a general concept of operations for all company locations and standardised security and availability mechanisms, a universal maintenance concept and consolidated – external and internal – organisational and personnel structures and processes. This boosts efficiency, cuts the ICT budget, improves flexibility and transparency, and reduces technological and organisational complexities.

“Can we combine the innovaphone PBX with third-party system components? What do we need to watch out for?”

The desire for maximum flexibility with regard to selecting VoIP components is obvious and understandable. After all, one of the major disadvantages of conventional telephone systems is

the fact that they are proprietary systems and that individual system components are not compatible, often even between different product lines supplied by one vendor.

This is totally different with standard-based VoIP systems. However, the actual product architecture determines the level of compatibility. Companies opting for an innovaphone PBX can count on maximum interoperability, as innovaphone is the only supplier on the market offering both standards – the session initiating protocol (SIP) and H.323 – for all system components.

For our customers, this means that integrating existing speciality telephones or wireless devices with the innovaphone PBX should normally run smoothly in a soft migration process.

In addition to the question of compatibility in the stricter sense, there is also the question whether all functional features will be supported. There is no general answer to this. If the innovaphone PBX is to be operated with end devices from other vendors, this is generally possible as long as the third-party vendor has based its products on at least one of the two convergence standards.

Each individual case will show whether all functional features can be supported. This can usually be answered by simply taking a look at the data sheet. The innovaphone certified specialist trade partner will also be able to help. This is the same for the innovaphone PBX and for other IP-based appliances operated in a company network.

“What about the energy consumption of the innovaphone PBX?”

According to an analysis made by the consulting company ComConsult, introducing the innovaphone PBX can lead to a reduction of energy consumption by up to 90 per cent compared to a conventional telecommunications system based on TDM technology, if only softphones are used. This probably makes the innovaphone PBX the most energy efficient telephony system currently available on the market.

And the innovaphone PBX is not only superior to conventional telephone systems. innovaphone solutions also prove particularly efficient when compared with other VoIP systems. The reason: in contrast to solutions made by other vendors, the innovaphone PBX is based on a concept that is not server-based. Instead, the innovaphone PBX is run on autonomous hardware, the innovaphone VoIP gateways.

In addition to the advanced product concept, innovaphone’s VoIP systems boast two additional features helping to reduce energy consumption: first of all, all components have been optimised with regard to energy consumption. As such, innovaphone’s IP6010, which manages up to 3,000 subscribers, uses merely 12 watts during constant operation and thus only a fraction of the energy a conventional telephone system would consume. Secondly, all of innovaphone’s system components can be powered over Ethernet. Power over Ethernet (PoE) is a method supplying network appliances with electricity via the Ethernet cable.

In addition to that: no separate network is needed to implement an innovaphone solution. As all of the innovaphone components are cooled down passively, no fan is needed and there are no additional cooling needs. Reducing energy consumption is good for your company and good for the environment.

“Our employees work at several locations. How difficult is it to train all staff on the innovaphone PBX?”

The transition from a conventional telephone system to the innovaphone PBX hardly has any impact at all on the employees. There is no change in core telephony functions as innovaphone’s solutions are based on European standards. As soon as the handset is picked up, you get a dial tone. After dialling, the telephone establishes the connection to the subscriber called. Depending on the status of the telephone, you will now hear the normal ring tone or the busy signal. This means there are virtually no training needed.

“How sustainable is our investment?”

innovaphone’s solutions guarantee sustainable investments on several levels. This applies to our customers' existing telephone environment as well as all new and follow-up investments.

The standard conformity of all components used in the solution allows for a gradual transition from fixed-line telephony to Voice over IP. This scenario, which is referred to as "soft migration", allows the existing telephone system to continue working. The speed of the migration can be adapted to the requirements of the individual company.

In addition to that, all of the components used in the innovaphone solution are based on the two non-proprietary signalling standards H.323/H.450 and SIP. This has the great advantage that innovaphone’s VoIP gateways can be combined with all VoIP end devices that are also based on these common standards.

Moreover, innovaphone’s solutions are particularly well adapted to integrating heterogeneous – traditional as well as IP-based – telephone environments. The possibility of a soft migration and vendor-independence mean that in economic terms, the investment is highly sustainable.

"We are growing very quickly. Can the innovaphone PBX keep pace?”

innovaphone’s VoIP solutions allow for all kinds of scenarios to be implemented in a company environment – from connecting individual home offices to complex enterprise scenarios with 20,000 subscribers. innovaphone’s solutions can be extended any time to integrate new and larger systems, without having to exchange existing components. The innovaphone PBX thus offers a high degree of flexibility, particularly for expanding companies and companies relying on flexible structures.

“Our company is spread across several locations, which are equipped with own telephone systems. As we are still bound to other vendors via leasing and maintenance contracts, we can’t migrate all locations at the same time. Is it possible to gradually migrate to VoIP with the innovaphone PBX?”

It is rarely the case that all telephone systems at all company locations are replaced at the same time. From an economic point of view, it makes much more sense to continue using the existing telephone systems for a certain period of time. This is usually necessary because of existing leasing and maintenance contracts. The innovaphone solution can be introduced once contracts expire or need to be renegotiated. This means that migration can be implemented in several steps, based on the individual customer’s requirements.

Installations across several sites usually involve migration beginning with interconnecting the conventional telephone systems over IP routes (trunking). This step has the advantage that a VoIP gateway is already in place on site for further expansion, while it is not a prerequisite to implement the next steps.

The situation becomes slightly more difficult as soon as a conventional telephone system needs to be equipped with further telephone extensions. Now the choice has to be made: either to make another investment in the current system, or to extend the conventional system with modern VoIP technology? The solution from innovaphone even provides the possibility to extend the system without making any changes to the set up. The new phone numbers are recognised by the gateway and are delivered over the network (LAN).

Instead of getting rid of the old telephone system, it can be gradually extended with innovaphone’s VoIP technology. No new modules need to be bought and no adjustments need be made to the existing system. Usually it is not even necessary to wire new work desks as the network is already in place.

Additional functionalities become available by activating the innovaphone PBX on the VoIP gateway. Waiting queues can be configured, operators can be set up and software solutions such as voicemail, fax, CTI and callcenter can be linked (using different interfaces) to the VoIP system. At some point, migration will be so advanced that the traditional telephone system is no longer needed. It can then be turned off and the innovaphone PBX can take over all functions in the new technology.

“Our internal IT team is supposed to take over most of the maintenance of the PBX. Is that possible?”

One of the major advantages of Voice over IP is the abolishment of technological, personnel and organisational double structures in IT on the one hand and in telephony on the other. The introduction of the innovaphone PBX therefore means that such dual responsibilities for maintenance and administration no longer exist.

At the same time, dependence on service partners is reduced, as firstly, innovaphone system components need little maintenance and secondly, all configuration, maintenance and administration tasks can be taken over by the internal IT department. This results in faster support processes, no more competence struggles common to support cases as well as an improvement of the ICT budget.

Companies without an internal IT department and not wishing to establish own structures or to work with a service partner may opt for a hosted solution. In this case, the entire innovaphone PBX is hosted by a specialised reseller, who also looks after service and maintenance.

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