

Voice over Wi-Fi or DECT? Weighing up the Choices

A SPECTRALINK WHITE PAPER IN CONJUNCTION WITH CISCO SOLUTIONS PLUS PARTNERSHIP PROGRAM



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Executive Summary

The world is undergoing a mobility revolution. New devices, applications and approaches mean that expectations for mobility and devices have never been higher.

Businesses across the world are turning to unified communications systems in order to equip their employees with mobile tools that will allow them to work intelligently in distributed or challenging workplace environments. Voice over Wi-Fi (VoWi-Fi) and Digital Enhanced Cordless Telecommunications (DECT) are the leading handset and network choices for enterprise users requiring communications.

Each solution has different strengths. However, each can bring equal value to the working lives of 'desk-less' employees. The value proposition of DECT is compelling, allowing excellent voice quality and availability for a comparatively smaller investment than required for Wi-Fi whilst still allowing for text and icon-based integrations to business applications. However, those looking to go beyond voice, into data rich applications, will find VoWi-Fi a logical step.

Both technologies will continue to see strong market acceptance for years to come. This paper examines which technology best fits what use case and what factors businesses need to consider when choosing their communications system.

Introduction

Businesses of all sizes and types have recognised the need for workplace mobility. Regardless of whether they are in offices, factories, hospitals, campuses, hotels or retail units, mobile employees are more productive and satisfied, while employers waste less time trying to find them. However, equipping these workers with typical mobile consumer devices, linked to a carrier contract, would involve a huge amount of expense for often poor availability, as well as a plethora of other considerations around data and device security, management and support requirements. Workplace wireless systems provide ubiquitous coverage and also support a full range of call control functions, such as redirecting and transferring incoming calls, as well as additional functions such as bespoke alarms or barcode scanners. These systems can equally support internal as well as external calls, taking advantage of existing call control platforms.

When addressing in-building mobility, businesses typically look at one of two choices, VoWi-Fi or DECT. There are a number of considerations that should inform this choice, from availability and durability, to functionality or price point.

VoWi-Fi and DECT answer these challenges in different ways and both have seen impressive growth over the past few years, fuelled by the need to increase worker productivity.

So which of these technologies is the best fit for which use cases?

Voice Clarity and Availability

It seems obvious that clear voice quality should be one of the primary considerations when choosing a communications system. Limiting dropped or interrupted calls and ensuring that signal is available throughout the building is vital. DECT and VoWi-Fi both offer enterprise-grade voice quality when designed and installed by qualified providers. However, there are some considerations that may impact voice quality that should be assessed when choosing a wireless voice solution.

When making a phone call, gaps and static, usually caused by dropped or delayed network packets, are immediately noticeable and incredibly disruptive. Packet drop or delay may not be noticeable over email or instant messenger. However, if the delay causes part of a conversation to be missed, it could create significant problems, especially in mission-critical or high risk environments such as manufacturing and healthcare.

Network design (i.e. the placement and number of radios) will differ between DECT and VoWi-Fi. DECT and Wi-Fi operate at different radio frequencies; DECT at 1.8GHz or 1.9GHz and Wi-Fi at 2.4GHz or 5.0GHz and these frequencies perform differently in terms of propagation, attenuation, interference, etc. For a given building of a given size, the choice of DECT vs. VoWi-Fi will have a large impact on the network design and ultimate cost of the solution, which can be a key decision factor for many customers.

Building layout and construction material may also have an impact on the choice of DECT vs. VoWi-Fi. For example, radio signals will travel very differently in a building densely constructed with heavy steel and concrete when compared with a building with wide open, unobstructed spaces. These characteristics will have an impact on the choice of technology, as well as the number of radios that need to be installed and associated costs. As a result, building construction may be a key consideration when looking for optimal voice clarity across a crowded or built-up space.

Regardless of choosing either VoWi-Fi or DECT, proper network design and installation is the single biggest factor to maintaining voice clarity and availability.

Network Design

When deciding on network design, businesses will need to weigh up the pros and cons of combining voice and data on the same network, or separating them to have standalone, dedicated systems.

DECT operates on its own independent frequency, guaranteeing that voice is never competing for resources with other data or treated as a lower priority communication. As a result, call quality is high, consistently available, and with a well-planned network of base stations, can be evenly distributed across a large space. The modular nature of DECT allows customers to easily expand coverage, voice traffic and number of users making it an extremely scalable solution across all sizes of enterprise.

As Wi-Fi becomes more pervasive in the enterprise space, more and more large companies are looking to Wi-Fi for both data and voice communications. The ability to converge voice and data on a single network allows businesses to get the most out of their Wi-Fi investment. However, designing Wi-Fi networks to carry enterprise-grade voice is very different than designing for simply data. Most existing data-only Wi-Fi networks usually need to be redesigned to be able to adequately handle voice. Nevertheless, this is often the choice made by larger organisations that have already invested substantially in their existing Wi-Fi network infrastructure and want to maximise that investment. It's absolutely vital that a

professional site survey is conducted which takes into account the wider considerations of data applications which will also be running across the wireless LAN. Skimping on costs at this stage will almost certainly lead to user dissatisfaction, poor voice quality, roaming gaps and far higher costs in resolving problems which could have been foreseen right from the outset.

Regardless of network choice there needs to be inherent capabilities within the technology in order to effectively manage hand-offs and transfers between access points. With both DECT and Wi-Fi networks, the device must be able to pass on the call without dropping a single syllable as employees roam from access point to access point. Elements, such as Call Admission Control, Roaming, Channel & Frequency Selection, and QoS are all built-in as defaults within Spectralink DECT solutions, whereas more detailed, sophisticated configuration is required on Voice over Wi-Fi deployments.

Built to Last

The durability requirements of workplace handsets are far more rigorous than those for personal use. Short battery life, easily damaged screens and 18-month life spans of consumer devices have no place in the working environment, nor on the balance sheet.

Both Wi-Fi and DECT handsets offer a great deal in terms of durability and resilience. Both are designed to a high specification in terms of drop endurance, rugged screens, liquid and dust resistance, with high graphics content including video. Having said that, it is also essential to understand that there are many thousands of DECT deployments worldwide which benefit from feature-rich productivity, patient care and customer service-enhancing application integrations, and have done so for many years. This means that the handset lifespan is far longer than 18 months with devices typically lasting three to five years before replacement.

Both Wi-Fi and DECT handsets typically have much longer battery life than most smartphones. DECT devices typically have a longer battery life than Wi-Fi handsets. The increased application usage and functionality on Wi-Fi devices can eat into the battery life but both have easily replaceable batteries. In addition, banks of spare batteries can be charged separately for shift workers and replaced in a matter of seconds.

Going Beyond Voice

The regular use of consumer smartphones is shaping our expectations about how workplace devices should look and their expected capabilities. Whether it's the touch screen, intuitive interface or choice of applications, the consumer smartphone market is fuelling a demand for in-work devices to provide similar experiences and functionality.

Both DECT and Wi-Fi devices present the opportunity for workplace specific functionality, such as integration with enterprise voice systems, duress alarms and messaging. With the rise in workplace specific applications and with advances in Wi-Fi, this permits vendors to go far beyond voice by offering much more extensive data-intensive applications with high graphic content including video. Having said that, it is also essential to understand that there are many thousands of DECT deployments worldwide which benefit from feature-rich productivity, patient care and customer service, enhancing application integrations for many years.

These applications provide unprecedented mobile capabilities and increased efficiency for different industries. For example, a hospital using VoWi-Fi would enable nurses to share patient records, integrate with monitoring and call systems, and above all, connect bed-side

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nurse-call systems to allow patients to get faster, appropriate support. In a manufacturing environment this could be integrating workflow management applications, facility or machine monitoring or equipment and resource tracking. Retail clients might integrate with stock control, building security or PoS applications.

Whatever your industry, productivity, efficiency and customer service can be maximised through sophisticated integration of both voice and data over the Wi-Fi network.

Building the Business Case

The decision on whether to choose VoWi-Fi or DECT is unique to every organisation. Each will weigh voice availability, network design, durability, investment, and tailor-made applications differently and according to the needs of their business.

For many, the decision will be heavily influenced by what existing networks they have in place. In the case of VoWi-Fi, the need for data or application provision will be a big deciding factor, particularly if an upgrade or overhaul of the network is planned in the near future.

From Spectralink's perspective, the solutions have equal value and both technologies will continue to see strong market acceptance for years to come. The value proposition of DECT is compelling, allowing enterprise-grade voice quality and availability through a comparatively smaller investment than required for VoWi-Fi. However, those looking to go beyond voice, into data rich applications, will find VoWi-Fi a logical step.

The key is for every business to define their objectives early in the process – both from an overarching strategy perspective as well as by investigating the needs and daily lives of their employees. By determining what is most important; increased productivity, improved communications, better customer or patient service, and the requirements of both voice and data in achieving those goals, businesses can assess the solutions on that basis. Once they know what they need, the next step is to understand if and how the existing infrastructure can be used to achieve that.

Based on corporate goals, existing infrastructure, employee profiles, and Return On Investment (ROI) analysis, organisations can then assess the vendors offering DECT and VoWi-Fi solutions, and how their devices and services meet their requirements.

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About Spectralink

Spectralink, a global leader in wireless solutions, solves the everyday problems of mobile workers through technology, innovation and integration that enable them to do their jobs better. By constantly listening to how customers move through their workdays, Spectralink is able to develop reliable, enterprise-grade voice and data solutions and deliver them through a powerful, durable device.



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