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[WHITE PAPER]

ASCOM IP-DECT: AN INTELLIGENT OPTION FOR MISSION CRITICAL HOSPITAL COMMUNICATIONS

PROVEN QUALITY OF SERVICES (QOS) AND RELIABILITY AT A LOWER TOTAL COST OF OWNERSHIP.

Benefits of Ascom IP-DECT

- Security: advanced algorithms for voice and data encryption
- Robustness: rugged, purpose-built handsets that resist water, dirt, impact
- Scalable: TDM and VoIP interfaces
- Interference-free: dedicated spectrum plus CDCS
- Infrastructure agnostic: SIP connection to any corporate PBX
- Cost-effective: strong global sales volume translates to lower end-user pricing
- Mission-critical communications platform
- Technologically advanced: Virtual SIM, role-based phones
- Flexible: connect access points directly into LAN/WAN anywhere with QoS
- Simplified Management: remote management via an IP connection

Ascom is the worldwide leading provider of on-site wireless communication solutions with over 75,000 installations. The healthcare industry represents more than 65 percent of our global deployments, increasing to over 90 percent in North America. Ascom has extensive experience in healthcare workflow optimization and is unique in that it manufactures and supports two wireless voice technology platforms – FreeNET VoWiFi and Freeset IP-DECT.

Furthermore, Ascom has developed the world's most robust event notification and messaging middleware platform, the UNITE Messaging Suite. Ascom has completed numerous healthcare integrations with hospital information systems and has even received a JCAHO accommodation for the first ever integration from a laboratory information system to an on-site wireless handset. The combination of these solutions (VoWiFi, IP-DECT, UNITE) allows for seamless voice and messaging integrations, including hybrid voice solutions where they make sense.

The two wireless voice technology platforms Ascom offers are a Voice over Wireless Fidelity (VoWiFi) system known as FreeNET and an Internet Protocol, Digital Enhanced Cordless Telecommunications (IP-DECT) system branded Freeset.

Each platform has its inherent strengths and weaknesses. While Ascom does not presume to prescribe which platform an enterprise should choose, Ascom does have a wealth of experience in working with hospitals and healthcare systems of all sizes and we are able to leverage this knowledge into a highly qualified recommendation.

As one of the oldest on-site wireless communications companies in the world, Ascom has greatly benefited from a long-standing historical perspective with regard to on-site wireless communications and the environments in which they are best suited. It is with this in mind that Ascom believes an IP-DECT solution can often be a better fit for individual hospitals as well as large healthcare systems.

Understanding IP-DECT

Ascom's Freeset IP-DECT platform uses the global DECT standard and operates in the North American Unlicensed Personal Communication System (U-PCS) spectrum (1920-1930 MHz). The U-PCS spectrum offers a major advantage over common use ISM frequencies such as 900 MHz, 2,4 GHz and 5.8 GHz because it has been set aside by the Federal Communications Commission (FCC) exclusively for on-site wireless communications, ensuring that mission critical voice applications are never interrupted by interference.

While DECT may be lesser known than VoWiFi and ISM in North America, enterprise-grade DECT handset sales worldwide vastly exceed those of VoWiFi and ISM handsets combined. This significant volume advantage yields more product innovation for DECT technology across all manufacturers and a lower cost to customers.

Security

DECT is a worldwide standard using advanced algorithms for voice and data encryption. DECT utilizes a cryptographic system to protect a conversation between the Portable Telephone and the Base Stations from eavesdropping. Cryptographic methods provide important functionality to protect against intentional and accidental compromise and alteration of data.

These methods support communications security by encrypting the communication prior to transmission and decrypting it at receipt. Each Portable Telephone is programmed with a unique subscriber 'key' which is built up from the unique Portable Technical Number and System Numbers. This key is used in a proprietary crypto-hardware circuit implementation to encrypt the speech data bits (per packet) by generating a scrambled bit-sequence in that frame. The process is reversed at the opposite ends of the system to recover the original data.

Robustness

The Ascom IP-DECT solution offers centralized management of full-featured, purpose-built handsets that can be shared across work shifts. Ascom handsets are impact- and water-resistant for reliable operation 24x7x365. In the rare event that a handset does fail, centralized management allows a user to instantly log into a new handset, maximizing time spent with patients.

Ascom infrastructure is based on hardened appliances which have no moving parts, no fans or hard drives and a decade-plus Mean Time Before Failure (MTBF).These appliances also utilize a highly reliable Linux kernel as opposed to a Microsoft operating system. Ascom's voice solutions are flexible and can connect to enterprise PBXs via session initiated protocol (SIP), analog or T1/PRI connections.

Scalability

Ascom IP-DECT utilizes industry standard Time Division Multiplex (TDM) and VoIP telephony interfaces to provide a fully integrated wireless communication platform. Seamless call handover and automatic roaming features ensure reliability for mobile users. The Freeset IP-DECT system is extremely modular in design and allows for very large deployments over multiple sites as well as near-instantaneous expansion to remote WAN-enabled sites. With its load balancing, multiple masters architecture, the Freeset IP-DECT system can handle 1,000s of IP-DECT Gateways, 10,000s of IP-DECT base stations and more than 100,000 handsets.

Interference-Free

DECT has been approved by the FCC to operate over exclusive frequencies for on-site wireless communications and is subject to Part 15 requirements. Since no other devices are allowed to operate in the spectrum, DECT offers virtually interference-free communications. Additionally, Ascom uses Continuous Dynamic Channel Selection (CDCS) as the core technology of the Ascom zero-touch RF system. CDCS is a full-time, automatic process used to select the most suitable high quality time and frequency access channel. CDCS optimizes the distribution of available channels per cell.

Calls are seamlessly handed over from one channel to another within one cell, optimizing the received signal and eliminating the need for radio frequency planning. Combined, DECT and CDCS offer superior voice quality without interference from other voice or data solutions.

Infrastructure Agnostic

As previously discussed, Ascom's voice solutions are extremely flexible and can connect to enterprise PBXs through standards-based SIP integrations or by using an Ascom VoIP Gateway with analog and/or T1/PRI connections. Because the handsets are not PBX-specific, should a hospital decide to upgrade or replace its PBX architecture, the Ascom handset deployments can easily be migrated to the chosen platform. Since Ascom manufactures its own IP-DECT Access Points and handsets, a hospital can rest assured that it has purchased a consistent, stable and proven platform that will serve it well for years to come.

Cost-Effective

Since global demand for DECT devices is six times greater than for other wireless voice technologies, product innovation for DECT is significantly higher. DECT's stronger sales volumes translate to lowered end-user pricing because of mass production economies of scale. In the case of replacing legacy dedicated wireless voice systems, Ascom IP-DECT can re-use the existing cabling to the legacy base stations while typically doubling the call-capacity per base station.

Furthermore, the Ascom IP-enabled, Linux-based servers have a much smaller infrastructure footprint and can be powered over Ethernet. The Ascom VoIP T1 Gateway can drastically reduce the cost of expanding a host PBX to support adding wireless telephones because the T1 Gateway manages all handset-to-handset calls internally.

With the VoIP T1 Gateway, Ascom handsets share a T1 connection to the PBX for access to desk sets and calls outside the hospital. This solution eliminates the need for a PBX port or license for every wireless handset added to the system. By re-purposing older architectures, enabling Ethernet advantages and minimizing PBX expansion, Ascom can significantly decrease the migration costs to superior DECT technologies.

Mission Critical Communications

IP-DECT architecture is ideally suited for mission-critical communications. As discussed previously, IP-DECT provides secure, interference-free voice communications. DECT's high security standards insure that Health Insurance Portability and Accountability Act (HIPAA) protected patient information is never at risk. Operating in the FCC's designated frequency for on-site wireless communications assists JCAHO compliance by guaranteeing consistently clear conversations.

JCAHO compliance is further enhanced when utilizing Ascom's UNITE Messaging Suite to integrate Freeset IP-DECT (or FreeNET VoWiFi) to existing hospital information systems. Electronic transmission of critical lab results directly to the handset of the caregiver assigned to a particular patient eliminates the risk of human error when results are transferred verbally.

Built-in escalation procedures and receipt acknowledgement requirements insure that every critical alert is addressed. Ascom IP-DECT also offers increased reliability with options for operating independently from the LAN/WAN architecture for maximum survivability in the case of network failure or scheduled downtime for maintenance. Furthermore, in the event of a PBX failure the Ascom VoIP Gateway can serve as a cost-effective disaster recovery solution by continuing to connect calls between Ascom handsets without interruption.

The Ascom VoIP Gateway has been recognized by the US government's Health Resources and Services Administration (HRSA) as a disaster recovery tool eligible for Federal grant reimbursement under the Homeland Security Act.

Technologically Advanced

A benefit of the Ascom IP-DECT solution is ''virtual SIM'' technology which allows users to ''log in'' to any d62 handset on the system and download their personal user profile over-the-air. ''Virtual SIM'' allows the hospital to assign a separate profile (and phone extension, if desired) to every wireless phone user without having to buy each staff member their own handset.

Virtual SIM also allows IT to provision, administer or update d62 handsets without ever actually touching them. ''Role-based'' phones which are assigned to a job type rather than a person can also be deployed. The Freeset IP-DECT system supports a highly versatile wireless handset portfolio: the administration-style d41, the medical-grade d62 and 9d24 and the intrinsically-safe 9d24 EX handset for use in hazardous locations. The d41 is an ideal solution for users with less complex demands but who still require reliable, quality handsets for intense daily use. The d62 and 9d24 offer the professional worker a powerful communication tool packed with feature-rich applications that improve efficiency in demanding environments.

Flexible Deployment Options

Ascom IP-DECT deployments can include connecting IP-DECT Access Points directly into a hospital's LAN or WAN anywhere that voice-grade QoS is enabled. It is also possible to design a private LAN used exclusively by IP-DECT Access Points and private LAN controllers.

Alternatively, when replacing any current dedicated wireless voice system (from Ascom or another manufacturer), Ascom BS330 base stations can re-use existing cabling to retain the benefits of a totally private, mission-critical voice communications solution. BS330 base stations offer extraordinary cabling range (up to 4900 feet) in comparison to Ethernet standard Access Points (up to 330 feet) and are often used to cover large campuses.

Additionally, hybrid deployments of IP-DECT Access Points and BS 330 base stations are easily accomplished. IP-DECT offers a wide variety of PBX interface options including direct SIP integration to many VoIP PBXs and analog and/or T1 port integration to all PBXs via Ascom VoIP Gateways. All of Ascom's PBX interface options can simultaneously support Freeset IP-DECT handsets and FreeNET VoWiFi handsets in cases where a dual deployment is desirable.

Simplified IT Management

Ascom has witnessed that increasingly hospitals have significantly higher demands for 802.11 data-intensive services (computers on wheels, patient monitoring, RFID tags, guest access, tablet PCs, dual-mode devices, etc.) thus putting an extraordinary strain on radio frequency (RF) management. Resource allocations are extraordinarily weighted towards managing a constantly evolving environment of devices competing for space and spectrum.

While some hospitals can afford this continuous cost and management, most are looking for ways to minimize cost and maximize control, all while balancing the needs of clinical users who demand easy-to-use yet powerful devices. Every component in an Ascom IP-DECT solution can be remotely managed via an IP connection, including modifying settings on any or all d62 handsets.

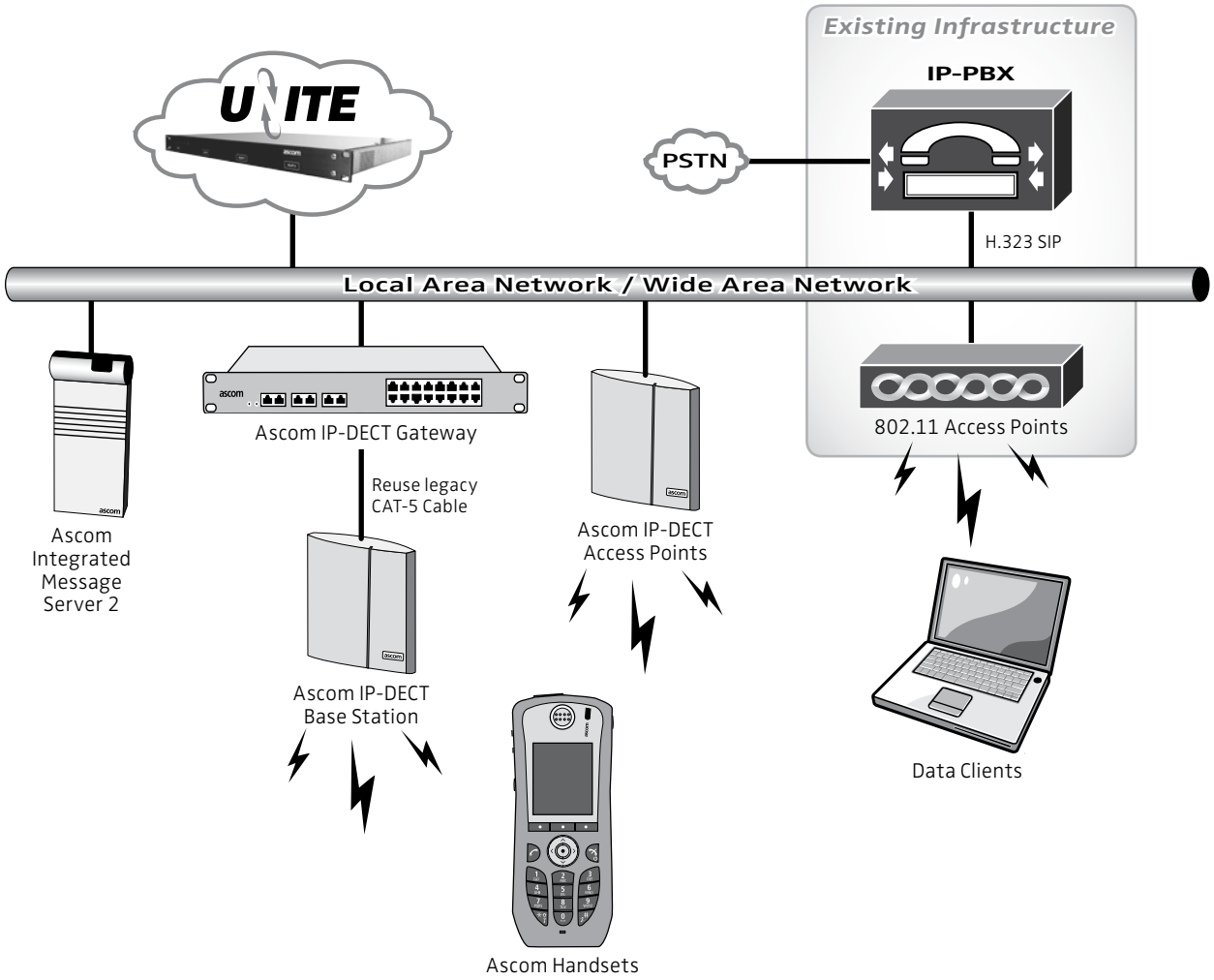
This ''zero-touch'' capability dramatically reduces (and in some cases totally eliminates) the need for IT/Telecom to physically manipulate a device.

Summary

Ascom offers the broadest portfolio of on-site wireless communication solutions available today. If your facility is replacing a legacy dedicated wireless voice platform, you should seriously consider reusing some of this infrastructure to more cost-effectively provide state-of-the-art wireless communications with Ascom's IP-DECT platform.

If you do not have a voice grade WLAN in place today, you may want to consider IP-DECT as a more cost effective alternative to building a WLAN to support VoWiFi. On the other hand, if you do have a voice grade WLAN but simply want the peace-of-mind that comes with separating mission critical voice from mission critical data, Ascom's IP-DECT platform should be at the top of your list for testing. Lastly, if you are simply tired of the challenges presented by having to manage voice and data on your WLAN, IP-DECT just might be the ideal alternative.

Regardless of platform, to build and maintain a mission-critical communications system requires diligence with regard to QoS, reliability and cost-consciousness. Hospital executives are continuously seeking to improve patient care and safety as well as caregiver job satisfaction and efficiency. On-site wireless communications have proven to address these needs for hospitals worldwide. Ascom is proud to offer the best of both IP-DECT and VoWiFi technologies and is happy to provide customers with whichever system they prefer.



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