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WIRELESS LAN FOR THE CONTINUUM OF CARE

Healthcare organizations of all types are increasingly dependent on wireless LANs. From hospitals to assisted living facilities and medical clinics, wireless LAN technology has become ubiquitous.

Hospitals have led the way in deploying wireless LANs. They're using the technology to improve patient care, increase efficiency and enhance the patient and visitor experience. With a wireless LAN:

- Hospital staff can access electronic medical records (EMRs) everywhere — at the point of care, in public work areas and in staff lounges.
- Care providers can use powerful, yet affordable, consumer communications devices that make their tasks easier and help them work more efficiently.
- Patients and visitors can access the Internet from within the hospital. They can enjoy entertainment or stay connected with co-workers and loved ones to pass the time while recovering or simply waiting.

While hospitals have actively adopted advanced wireless LANs that enable these capabilities, retirement homes,

assisted living centers and nursing homes have been slower to make the move. To date, they haven't seen a pressing need to deploy anything but coverage focused, low capacity networks. However, the healthcare trends that are driving the need for advanced wireless LANs in hospitals also affect these facilities.

HEALTHCARE TRENDS DEMAND AN ADVANCED WIRELESS LAN

Three main trends in healthcare drive the need for assisted living facilities to deploy an advanced wireless LAN.

Widespread adoption of EMRs

EMRs were first used in hospitals and clinics, but an increasing number of assisted living facilities are recognizing their benefits. They're adopting EMRs to eliminate paper, automate manual processes and improve efficiencies. E-charting is best performed as close to the point of care as possible. With an advanced wireless LAN, e-charting can take place anywhere — at the bedside, in the hallway or in a lounge.

Nurse mobility

Leading care facilities are providing nurses with wireless handsets. With handsets that are connected through the wireless LAN, nurses and aides can receive calls from residents' family members and other members of the care team while on-the-move. If wireless handsets are integrated with nurse call systems, residents can even use nurse call buttons at bedsides and in washrooms to initiate a call directly to their nurse's wireless phone.

Tech-savvy residents and visitors

Residents of and visitors to healthcare facilities are increasingly comfortable with technology. Residents often want the same level of high-speed wireless services they enjoyed in their homes. Visitors also expect access to wireless connectivity; they're used to being able to connect to the Internet everywhere they go. Easy-to-use tablets and smartphones fuel demand for always-on wireless connectivity in care facilities. Today, these inexpensive and powerful devices are carried by an ever-increasing portion of the population, regardless of age.

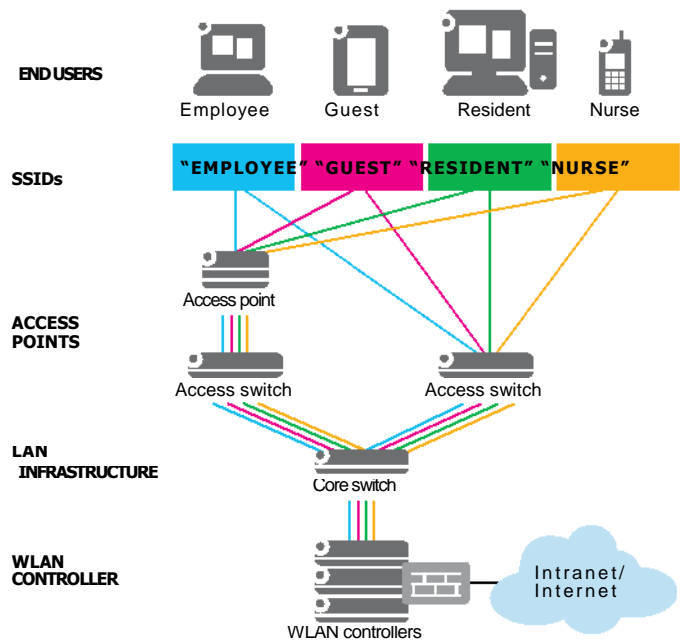
ANATOMY OF AN ADVANCED WIRELESS LAN

An advanced wireless LAN brings assisted living facilities the technologies and capabilities that are needed to benefit from the latest trends in healthcare. The advanced wireless LAN is:

- **Shareable.** A single physical network can be securely and safely shared by many applications and many users, each with different access rights. Guest Internet access can be completely segregated from EMR access even though they use the same physical wireless LAN.
- **Expandable.** The wireless LAN can be easily extended after the initial deployment to meet new needs. These needs could include adding coverage to new areas of the facility or increasing access point capacity to support new applications such as real-time location services or voice.
- **Open.** 802.11 is an international standard. The Wi-Fi® Alliance assures seamless connectivity of devices through certification testing. Assisted living facilities that deploy Wi-Fi can connect a wide range of handsets, tablets and computers on wheels (CoWs) as well as specialized clinical workflow devices, such as bar code readers and printers, to their wireless networks.
- **Secure.** Advanced wireless LANs support healthcare best practices and are as secure as the wired networks they sometimes replace. Access can be strictly controlled, data can be fully encrypted and attacks can be quickly detected and mitigated.

Figure 1 illustrates the high-level architecture of the advanced wireless LAN. This architecture has been deployed by leading healthcare organizations from hospitals to hospices.

Figure 1. Wireless LAN architecture for healthcare



An advanced wireless LAN consists of the following elements:

- **Wireless LAN Service Set Identification (SSID).** The SSID is the wireless LAN name that end users see on their wireless devices. A single access point can broadcast multiple SSIDs. That means the same access point can identify itself as the "guest" network to visitors, and as the "care" network to care providers and CoWs.
- **Access points.** Access points are antennas that allow end users to connect to the network. In general, the larger the area to cover, the more access points are needed. The placement and number of access points depends mainly on the layout and construction of the building and the desired applications. For example, a wireless LAN that delivers only data access will require fewer access points than a wireless LAN that delivers real-time location services.
- **LAN infrastructure.** The LAN infrastructure provides power to the access points and serves as the wired on-ramp for the data to traverse the rest of the network. The ultimate destination for the data could be a server or an application provided by the facility. Or, it could be an application or service on the Internet. The LAN infrastructure segregates the data from the various applications and can restrict the usage of a given end user.

- Wireless LAN controller. The wireless LAN controller provides roaming capabilities, airtime management and enforces quality of service. The wireless controller dynamically adapts the environment to ensure coverage, capacity, quality, and assured throughput for mission critical clinical applications while isolating public internet users from the rest of the facility's network.

BETTER CARE, BETTER BUSINESS

With the advanced wireless LAN described above, assisted living facilities can improve care and build their business.

For example, they can:

- Protect their investment in EMRs. An EMR that cannot be accessed everywhere in the facility cannot be fully utilized. An advanced wireless LAN that provides access everywhere in the facility, even while people are moving, encourages widespread EMR adoption.
- Increase staff efficiency and resident safety. An environment where a nurse can always be reached by phone, regardless of his or her location in the facility, helps staff work more efficiently and effectively. It also provides peace-of-mind for residents who know they can always speak directly with a nurse in a time of need.
- Attract residents. People of all ages increasingly rely on the Internet and Wi-Fi devices to stay in touch with loved ones. Wireless Internet services can be positioned either as part of the overall resident package and be a competitive differentiator or as a premium service for an additional fee to increase revenues.
- Rent their facilities. Many retirement facilities market themselves to local businesses and community groups as a venue for events or meetings. The availability of wireless Internet services can help entice renters to the facility. It can also be offered as an optional service for an additional fee.
- Enhance the experience for professional visitors. Physicians and other specialists regularly visit assisted living facilities to treat residents. These professionals often have the need and the ability to connect to their own resources, whether they are office EMRs or other professional resources. Catering to these professionals makes the facility a more pleasant place for them to do business.

ALCATEL-LUCENT and PVA ARE PROVEN HEALTHCARE PARTNERS

Alcatel-Lucent and PVA bring assisted living facilities all of the products and expertise needed to deploy an advanced wireless LAN. We also bring experience delivering innovative communications solutions for assisted living facilities, including:

- Suncoast Hospice, America's largest, non-profit, community-based provider of in-home, palliative care services. Suncoast installed an Alcatel-Lucent wireless LAN in Hospice House, a 75-bed acute care and end-of-life inpatient facility designed to resemble a private home. Among other services, the wireless network enables a two-way live link between inpatients and mobile hospice staff carrying wireless phones.
- Montedomini Healthcare Center, a public city agency that provides health monitoring, health emergency services and rehabilitation services for the elderly in Florence, Italy. To enable Montedomini to bring healthcare services into the home while reducing costs and preventing isolation, Alcatel-Lucent deployed a video-assistance solution that gives the elderly and disabled around-the-clock access to help.

All of our projects with assisted living facilities benefit from our partnerships with leading healthcare organizations around the globe, including:

- Children's Hospital of Pittsburgh of the University of Pittsburgh Medical Center (U.S.)
- Advocate Health Care (U.S.)
- Annecy Regional Hospital Center (France)
- Liverpool Hospital (Australia)
- Montreal Health and Social Services Agency (Canada)
- North Bristol NHS Trust (U.K.)
- SevenHills Hospital (India)

For more information about our customers, expertise and healthcare solutions, visit www.PVAGlobal.com