Connected Health in Australia and New Zealand

Welcome to the human network

Connected Health

The vision of significantly enhanced health collaboration, securely sharing information from patient records, to radiology, bed availability and billing data between clinicians, health entities and individuals, is increasingly seen as the way forward. It holds out the promise of substantial improvements in community wellness, patient outcomes and health provider efficiencies.
By providing secure ways to enable clinical collaboration, while providing access to the right information in the right place at the right time, Connected Health can dramatically improve care, increase productivity, and save lives.

The benefits of Connected Health

The benefits of Connected Health are far-reaching. People can benefit from the convenience and consistency of being able to share medical information between health carers and providers to avoid unnecessary tests, improve accuracy of diagnoses, and improve safety, particularly in emergencies. They can easily manage their own health records, using collaborative tools, for example. And making important information available to authorised healthcare providers improves patient outcomes by reducing prescription and treatment inconsistencies.

Clinicians can now collaborate more easily with colleagues and specialists in this country – or anywhere in the world. Using Web 2.0, having access to consults from colleagues is now easier than ever before. Health practitioners can benefit from fingertip access to up-to-the-minute medical and clinical results and records for their patients, enabling them to rapidly correlate information and identify symptoms or patterns. This information can be accessed anywhere, anytime using wired or wireless mobile devices, improving response times, accuracy and the level of bedside and emergency care. With easy access to prescribing databases, care paths, policies and clinical evidence bases, practitioners are more informed to reliably apply the right intervention at the right time.

Connected Health and Web 2.0 collaboration also simplifies and improves billing, recording and booking procedures for patients, providers and administration staff by providing easy access to secure, shared systems. Staff are able to rapidly check and confirm the availability of facilities, creating more efficient use of resources such as beds in acute hospitals, emergency rooms and specialists.

With a global view across their organisation, health administrators are able to plan and allocate staff and resources more efficiently. When health administration is streamlined in this manner, substantial cost savings enable funding to be reallocated into the pressing areas of patient care, population health and medical research programs.

Connected Health equalises access to skills, knowledge and services across regions by improving the quality of care in rural and regional centres. City-based specialists are able to cost-effectively video conference with patients and staff while reviewing medical records. Using Web 2.0 collaboration tools such as WebEx, meetings and consults can be instantly established, with a clinician able to instantly see who is immediately available to join. Results from pathology or other procedures can be accessed online just as quickly in a remote area as they can in a major centre, dramatically improving response times. And medical professionals all enjoy the same high quality access to up-to-date information, professional resources and databases.

A critical debate

The debate about how to improve the quality and effectiveness of healthcare in Australia and New Zealand has reached a critical point.

Clinical, demographic, technological and financial pressures on the health system are increasing as patients demand better healthcare, and practitioners demand more effective systems. Governments, taxpayers and private companies are struggling to balance the increasing demand for improved healthcare services with constrained healthcare budgets and workforce resources.

Cultural change

In a Connected Health collaborative framework, interactive and networked information and communication technologies combine with, support, and in some cases accelerate, organisational policy, process and cultural change to improve the quality of the experience of those who are being treated by, and those who work in, the healthcare system.

Therefore Connected Health and enhanced healthcare collaboration are part of, and are leading, a change in the governance of healthcare – putting people, families and communities at the heart of responsive networks of knowledge, service, trust and accountability.

Setting priorities for healthcare, and determining the right mix of technology and innovation to achieve the desired outcomes will be legitimised by an approach of inclusion and consent. That means the community, clinicians and other healthcare providers have to be at the heart of planning and implementing a knowledge-enabled healthcare system.

In this scenario, technology will be judged by the extent to which it makes it easier to keep people well, treat patients more effectively, and for healthcare providers to work more efficiently. The vision, therefore, is to use technology not just to connect locations, but to help people work more effectively so that they can deliver better, safer and more efficient care.

It is not a question of adding some technology and colourful websites to a 'business as usual' model of healthcare. The Connected Health vision questions deeply held concepts of clinical practice and patient care, constructively challenging some of the Connected Health community.

Connected Health community

A solution for emerging lifestyle, work practices and collaboration

The key to dramatically improving the healthcare system is to improve the information and knowledge flows that link patients, clinicians and healthcare providers. And central to successfully achieving that endeavour is the effective use of information and collaboration technologies.

The Connected Health framework recognises that people will increasingly expect to be able to communicate and interact with relevant communities on their lifestyle and health as they move around or receive treatment in hospitals, their offices, at home or on the road. Healthcare workers will increasingly rely on secure, fast and reliable information networks to access the information and knowledge they need, where and when they need it. The infrastructure for this interconnecting 'network of networks' will standardise around secure, converged, fast IP networks capable of delivering data, voice and video over the same wired or wireless network.

Overlaying this will be layers that provide a strong Web foundation, common authentication, directory, messaging and security services, and a suite of increasingly interoperable applications and collaborative solutions for patient care and clinical support. These would include personal electronic health records, patient records, clinical information systems, imaging, as well as knowledge and learning management, procurement and organisational management, finance, human resources and more.

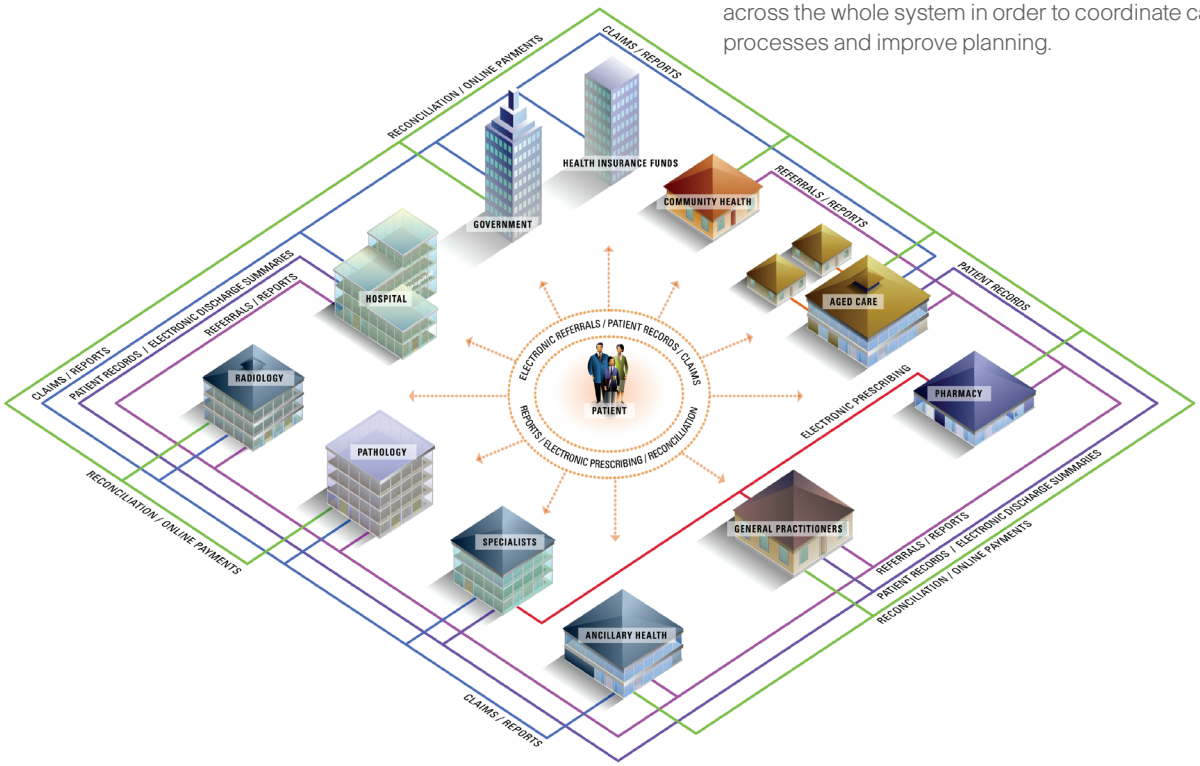
Standards and work practices

The Connected Health vision implies an ability to determine nationally, and in some cases internationally, consistent standards and interoperable business processes that span different organisations and different jurisdictions. Decisions about the architecture, applications and infrastructure to enable information and knowledge to follow the patient have to be taken quickly, based on consent and authority and executed rapidly. It requires a long-term, sustained transformation in the structure, process and culture of healthcare. Looking forward 20 years or more, the Connected Health vision assumes a healthcare system characterised by:

- The use of technology to communicate, collaborate and coordinate across boundaries of care and geography;
- A new focus on shared and inclusive decision-making as power and authority shifts from professionals to patients;
- Healthcare systems that more closely resemble well coordinated teams over traditional hierarchies;
- The capability for healthcare workers to have 'visibility' across the whole system and collaborate effectively within it as a part of the whole community of interest; and
- A shift from ego-centric to network-centric thinking, engendering more transparent, collaborative management based on trust, cohesion and cooperation.

A vision for the future

Connected Health allows for the formulation of a new paradigm in healthcare delivery. It requires a steady transformation in work practices, manifested in a gradual shift towards greater connection, communication and collaboration across different healthcare providers to ensure a continuum of service for the patient. It also enables healthcare and organisations to have greater 'visibility' across the whole system in order to coordinate care, streamline processes and improve planning.



Connected Health architecture

How a Connected Health model works

The vision for Connected Health is people, families and communities at the centre of networks of knowledge, services, trust and accountability. This requires a 'medical-grade' network architecture with four key attributes that are essential for Healthcare providers – security, resilience, mobility and support for multiple applications. To meet these needs, Cisco has developed with the sector a reference architecture for a Cisco Medical-Grade Network.

Security

The security of the system and the confidentiality of patient records is of paramount concern. Citizens, patients, doctors, specialists, pharmacists and health providers need to be able to access information easily and securely. The Cisco Medical-Grade Network is unique in its capability to provide complete defence for information, applications and services. It is fortified to protect sensitive patient and health provider information in both wired and wireless environments from attacks that emanate from both inside and outside the organisation. This robust security enables health authorities to meet privacy requirements by ensuring the confidentiality of voice and data communications and providing the capability to avoid, mitigate and quickly recover from security breaches, virus and worm attacks. It is also easy to administrate – from one console IT staff can instantly deploy and enforce security policies across all users and devices within their control.

Resilience

In a health environment, the network must be available at anytime to ensure that vital and potentially life-saving information and records are always accessible. The Cisco Medical-Grade Network enables health authorities to meet business resiliency targets even in the event of network, server or power failures or other disruptions. It does this through network blueprints that incorporate alternate network paths and ensure there is no single point of equipment failure that can stop vital health services.

The Cisco Medical-Grade Network can provide the infrastructure to allow services like distance diagnostics and patient medical records to be distributed across multiple locations to ensure they are resilient to failure, viruses or network attack. Network, business and clinical applications, and communications are configured to resist faults and automatically reconfigure and reroute in the event of disruptions. This keeps network services available and gives staff continual access to applications, communications and resources from any location. For example, in the event of failure or exceptional call volumes, calls can be rerouted to back-up centres ensuring that essential telephony services continue operating.

Mobility

Many health organisations are already benefiting from wireless deployments which allow staff to move freely around the facility and in the community while still remaining connected to data and communication services.

The Cisco Medical-Grade Network offers a suite of mobility solutions that provide staff and visitors with secure, local or remote wireless access to the network resources you determine. As well as improving the effectiveness of staff, mobility solutions can transform bedside care by providing on-the-spot access to important health information, such as prescription databases, dosage recommendations and patient records. In triage situations, they can save time and lives.

Because mobility is just an extension of the wired infrastructure on a Cisco Medical-Grade Network, it already features inbuilt security from the wireless access point or cellular gateway to the user's device. This makes it easy to deploy mobility solutions to staff as and when you require, and centrally manage all of the wireless devices in your organisation.

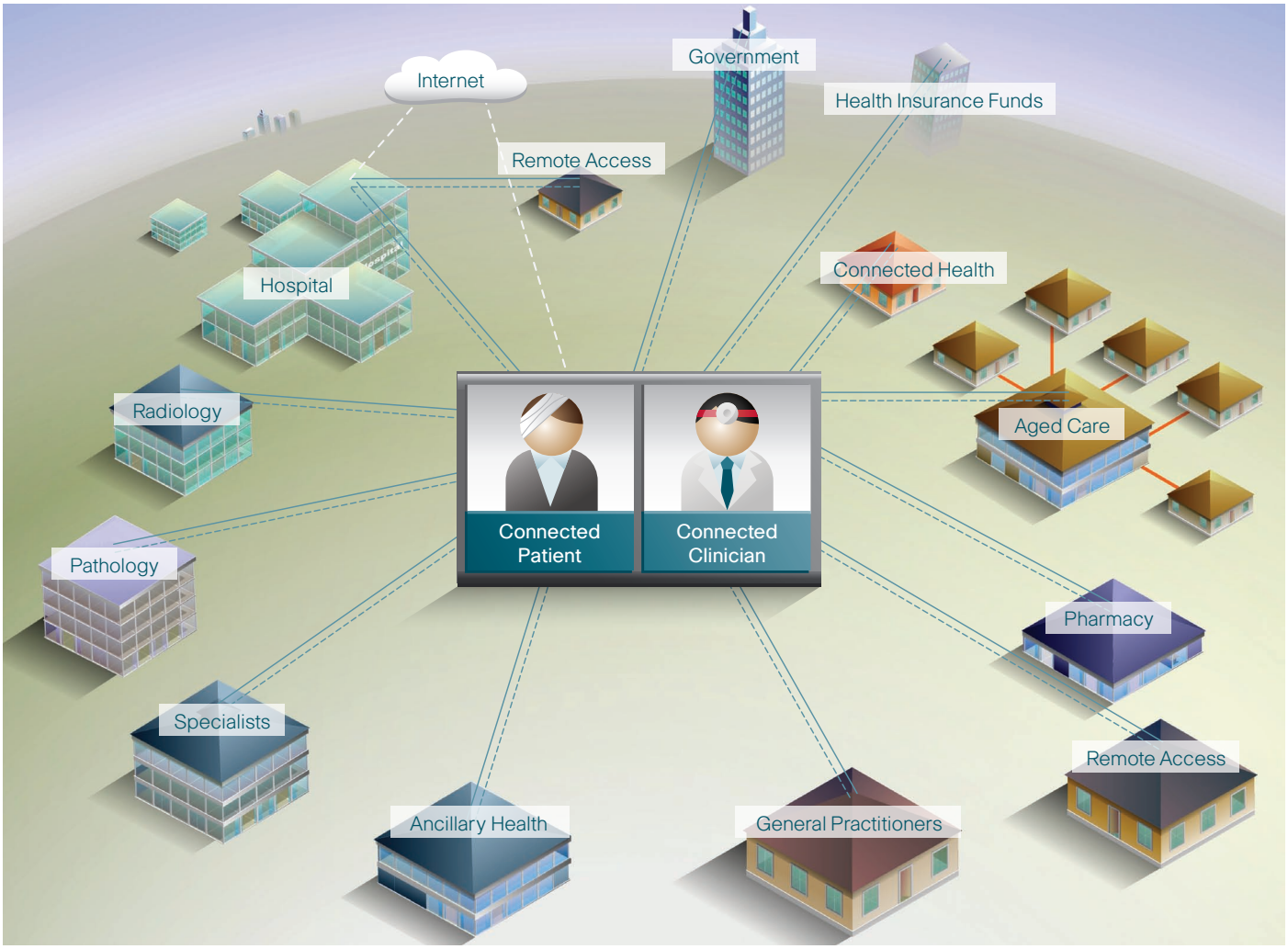
Support for multiple applications

The Cisco Medical-Grade Network supports all manner of data, voice and video applications running concurrently on a single converged network. This enables health organisations to meet their diverse requirements for a wide range of clinical, prescription, imaging, telephony, video and audio conferencing applications and enterprise applications without the need for multiple single-use application networks.

A single converged network also provides many opportunities to leverage new and emerging applications that improve service levels, facilitate education and simplify administration. For example, on-demand IP video streaming enables patients to self-serve healthcare information at kiosks or bedside screens. Videos can also be streamed to the desktop or mobile devices keeping clinical staff abreast of new healthcare practices and procedures.

Affordable IP videoconferencing allows specialists to confer and provide remote consultations for patients, saving time and travel expenses while providing better quality care. And intelligent unified voice/data and paging services are able to locate healthcare workers instantaneously without having to message through a hospital switchboard for example, and provide them with secure access to vital information.

Cisco Quality of Service prioritises network traffic to ensure that all of these applications perform at their peak across the one network with the highest levels of security.



Measures of success

Connected Health solutions should be measured not just by their ability to connect facilities, but by their effectiveness in helping people to manage their own wellness and in helping healthcare workers deliver better, safer and more cost-efficient care. This can be gauged using four indicators.

The Patient Journey

The simplification of the process and the minimisation of touch points in the care of a patient, delivering high quality clinical care with minimised intervention. The measures will focus on access, convenience, trust and the ability to navigate securely and reliably through the healthcare system.

The Connected Clinician

The ability to integrate the work of clinicians and other healthcare providers as they create a web of trust, service and accountability throughout the health system. The measures will be clinician confidence with technologies that secure more time for frontline caring and sustained professional learning, which accommodate their increasingly mobile and flexible working lives.

The System Efficiency

The ability to dramatically improve overall health system performance, including quality, safer workforce management and training, knowledge management, billing and payments, procurement and information management. The measures will look at issues of efficiency, cost reductions and the quality of the workforce and organisational management processes and systems.

The Well Citizen

The ability to enable citizens to proactively inform themselves and develop lifestyles that optimise their concept of wellness.

Connected Health
Case studies at-a-glance

Helping you deliver safe, affordable, accessible care, Cisco healthcare solutions lead the industry in combining advanced networking with easy-to-use technologies. Our solutions and partner services are designed specifically to reduce costs while increasing patient access, convenience and care.

Eastern Goldfields Regional Reference Site (EGRRS)

The Eastern Goldfields Medical Division of General Practice in Western Australia was experiencing a number of challenges. Extremely long distances between healthcare providers in the region meant effective communication was difficult, and a lack of data security was inhibiting the secure transmission of medical information and access to patient records.

Cisco in partnership with IP Systems, delivered Connected Health to the Eastern Goldfields community via a Cisco Medical- Grade Network. New value generated by the solution includes the timely delivery of medical data which has improved patient care. By using a Virtual Private Network (VPN), medical practitioners now also have network access from offices as well as homes. While unified communications allow for increased cost savings and effectiveness, high-speed connectivity over great distances now gives the Eastern Goldfields Medical Division of General Practice seamless availability of digital patient records, radiology reports, medication information and other important data. The Eastern Goldfields solution is now fully self-funded by the healthcare community in the region.

The Children's Hospital at Westmead

The Emergency Department at The Children's Hospital at Westmead sees 26,000 patients each year, and timely delivery of information to relevant caregivers is vitally important. Cisco and some of its key technology partners, Dell, Intel, IBM, Cerner Corp., PowerClinical and Vocera Communications, commissioned the NTF Group to provide independent research on technology they supplied as part of a trial.

The solution supplied was run over a wireless network in the hospital's Emergency Department and featured voice-activated, hands-free communications over IP technology. The research showed the trial solution has produced dramatic improvements in staff productivity, potential cost savings and improved patient care. 20 hours of staff time was saved per day – an efficiency which if spread across other hospital departments would amount to 122,000 hours per year, or a saving of more than $7 million annually. Clinical staff reported a very high level of satisfaction with the way the technology supported their delivery of care. And staff and patients at the hospital have also experienced shorter waiting times and improvements in patient care and safety, which in turn, have boosted staff satisfaction and productivity.

Cloud 9: Connecting Clinicians for Better Health Care – Royal Prince Alfred Hospital

Cloud 9: Connecting Clinicians for Better Health Care is the result of six case studies carried out at the Royal Prince Alfred Hospital (RPA), including in-depth analysis of the current IT business systems and processes in place. Of particular interest is how current systems affect a 'day in the life' of six medical professionals. Cloud 9 finds that the combined impact of the following three factors is fuelling fundamental reform in the design and delivery of healthcare:

- The availability and timely accessibility of reliable and useful clinical applications and services.
- Constant improvements in workflow and business practices that determine how people do their work and interact with those on whom they rely most closely.
- The pervasive use of networked information and communication technologies.

Cloud 9 shows how technology can help health professionals improve productivity, efficiency, and communication – resulting in lower cost of services and better patient outcomes.

Bay of Plenty District Health Board

The Bay of Plenty District Health Board (BOPDHB) is responsible for funding and providing health and disability support services for the 200,000 people living in the Bay of Plenty district in New Zealand. The Board's mission is enabling its communities to achieve good health and independence, and to ensure access to high-quality health services.

The BOPDHB has increased productivity and reduced operational costs through the adoption of a range of Connected Health solutions from Cisco, including wireless networking, unified communications, network security and storage area networking (SAN). The deployment began with an initial exploration into wireless access at the Board's Tauranga Hospital and surrounding grounds. The trial was a success, and since that time, the BOPDHB has rolled out a range of Cisco solutions to reduce its operational costs and improve productivity.

Grant Ardern, IT Systems Manager for the BOPDHB, said; "What is excellent for us is that the system delivers both in terms of productivity and investment. BOPDHB staff have found a number of innovative ways to utilise the benefits of wireless connectivity around the hospital site and remotely. One good example is our doctors using wireless technology to access radiology and other files in the operating theatres. This potentially lessens the risk of bringing in bugs or germs on paper files or other equipment."

The converged Medical-Grade Network strategy delivers voice, video and data on one scalable network. The wireless local area network provides both coverage within the campus and reach across the local central business district, giving users highly secure access anywhere from cafés to clinicians' houses. Virtual private networking technology allows clinicians to securely connect to the network from wherever they are to give them more control of their available time. On the campus, the BOPDHB has deployed Cisco IP phones to provide greater flexibility, improve workforce productivity, and free up time for its clinicians to help patients.

Improving healthcare's future with Connected Health

Across the globe, governments and healthcare systems have initiated broad healthcare improvement programs illustrated by the following examples.

Canada Health Infoway is working to link clinics, hospitals, pharmacies and other points of care by accelerating the development of a pan-Canadian network of interoperable health record solutions.

In Munsingen, Germany, the operating company Kreisklinken Reutlingen rebuilt its Albklink Hospital, investing in an integrated, high-performance infrastructure based on Cisco Medical-Grade Network technologies in order to improve patient care and services.

The network carries all the hospital's data applications and its telephone services. Hospital personnel use both wired and wireless Cisco IP phones as well as other mobile devices, such as PDAs and laptops. With the network, staff can access a range of telephony and data services to remain in contact with patients or colleagues even when they are on the move.

In Boston, Massachusetts, Beth Israel Hospital was experiencing equipment losses that totalled more than USD 300,000 a year until it installed a Wi-Fi asset-tracking system. With this location-based tracking and visibility service from PanGo and Cisco, hospital staff could make more efficient use of critical equipment and people in an emergency room environment with 57 patient rooms.

The University of Rochester Medical Center is the heart of medical knowledge and expertise for central and upstate New York. It has implemented Cisco Connected Imaging to improve its PACS by providing secure, optimised image transport so that the health centre can better manage its growing number of data-rich medical imaging files.

In Ontario, Canada, collaboration between the London Health Sciences Centre and St. Josephs Health Care has shown what can be achieved with Cisco Connected Imaging. These institutions provide tertiary diagnostic imaging – X-rays, fluoroscopy, CT scans, MRI, ultrasound and nuclear medicine – for 1.5 million people, served by 41 community hospital sites spread over an area of nearly 29,000 square kilometres.

Aged Care
Case studies at-a-glance

Changing demographics, increasing demands and workforce constraints have forced a rethink of services in Aged Care. The opportunity for Cisco to use converged IP infrastructure and assistive technologies to deliver communications, building services, security and healthcare allows greater independence and lifestyle choices for older people in both residential and community settings. The case studies below highlight the key benefits of Cisco technology.

Viceroy

Viceroy is a newly developed retirement facility which is positioned as the ultimate, smart living, residential community. Cisco has teamed with leading international firms Clipsal and TAC to provide Viceroy with the latest in smart care technology.

A number of innovations are included in the facility to ensure the wellbeing, safety, independence and security of residents. For example, lights and electricity can be set to turn on or off automatically, and can even be switched on or off via a simple phone call when residents are away from home. Cisco IP phones offer state-of-the-art voice and video communications, combined with low cost call charges. Also provided is high-speed broadband Internet connections, and free-to-air and pay TV.

Samarinda Lodge

Situated in Victoria, Samarinda Lodge is a fully accredited, not-for-profit aged care facility, providing essential, round-the-clock care to 40 residents. With communication long recognised as a key success factor in providing quality care, Samarinda needed to improve its inefficient resident-to-staff and staff-to-staff communications. The facility also wanted a communications system that could scale to cater for more users in the future.

Samarinda Lodge chose a Cisco Unified Wireless infrastructure, running a Vocera Communications System. The new solution includes Cisco IP phones for each resident's room, and has produced better resident-to-staff communications with time savings to the value of AU$65,000 a year. The secure, high performance network has also improved staff-to-staff communications, and laid the foundation for new services in the future. These include wireless security cameras, the ability to control lighting and ambient controls from the IP phone, and the easy delivery of video-on-demand and high-speed Internet access throughout the facility.

SwanCare Group

Located in Perth, Western Australia, the SwanCare Group is a non-profit and non-denominational organisation which provides quality care for 1,100 elderly residents. A key concern for the SwanCare Group is safeguarding the health and wellbeing of residents, while providing the quality lifestyle they increasingly expect. For SwanCare, finding economical ways to provide high-speed Internet access and high quality voice, video, security and monitoring services was a challenge.

By deploying a Cisco Medical-Grade Network, SwanCare has been able to improve outcomes for the residents, provide comprehensive network-delivered services, increase staff efficiency, and at the same time, provide an additional income stream for services delivered. These include broadband Internet services, IP telephony services and the latest in intelligent housing – a programmable interface which monitors the use of electricity, lights, water or any number of digital devices, then alerts staff if it seems that a resident requires assistance. This monitoring solution enables couples that might otherwise be split into separate healthcare facilities to stay together for longer. The Cisco solution has proved an invaluable, scalable solution enabling SwanCare to add new features and upgrade services as and when they're needed.

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