Digital Signage in Healthcare

ONELAN Whitepapers

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2 Introduction

Doctors’ offices, hospitals and nursing homes are quickly discovering that digital signage can revolutionise the way they communicate with their patients and staff. The advantages are clear: digital signage is visually dynamic, engaging and flexible.

Digital signage is a relatively new technology, and the health sector is still learning how it can best be put to use in their communications strategies. The companies and organizations that move first will be the ones at the cutting edge. The healthcare industry is only now discovering the many benefits digital signage has to offer. This white paper aims to demonstrate these benefits.

There are numerous applications for Digital Signage in hospitals, doctors’ surgeries, clinics and dentists to name but a few. Content can be changed or updated instantly, and is one of the most effective means of communicating information to patients, not just to promote but to educate. It can show a confused patient suffering from particular disorder what to expect when they undergo treatment. It can soothe the nerves of the anxious children by providing them with something to look at while they sit in the children’s hospital accident and emergency room with their parents, being much more appealing than out-of-date comics. Touch screen displays can be used to help patients find their way or to speed up the hospital check in process.

There is no lack of data in healthcare facilities; the challenge is making that information usable. By combining a visual medium such as digital signage with an effective information delivery system, existing data can be utilised to reduce operating costs and increase efficiency and the quality of service provided. Relevant information may originate from a combination of databases, including facility scheduling or tracking systems, and even patient information that can be obtained by innovative means such as barcode or RFID scanners. This data can then be triggered on demand based on information that is specific to the time, patient or situation. For example, scanning the barcode on a patient’s identification bracelet as they enter the operating room can trigger the display screen to show vital information about that patient and their scheduled surgery. This not only improves quality control, as hospital staff can verify the patient and procedure, but it is also a means of providing the medical personnel with a clear view of the information they require (such as lab results, pathology and x-ray data).

Traditionally, healthcare facilities have deployed digital signage systems to inform visitors about the facility, such as with wayfinding applications or donor appreciation messages. A few progressive organizations, however, have recognised the potential to deliver targeted information to their staff at the time it is required.

Diverse information sources and a frequent lack of information transfer between departments and health personnel means that an effective communication strategy is vital. For this reason many healthcare organizations are turning to digital signage as one way to help them overcome this challenge.

Handling and interpreting information by several people prior to delivery, increases the risk of inconsistency, delays and errors. Digital signage alone cannot solve those issues; but by linking signage directly to the source through software that is context-sensitive, accurate information that is specific to a time and place can be conveyed to those who need it, at exactly the right time, – in a visual format that’s easily understood whether the viewer is a surgeon or a member of the cleaning staff.
Some examples of how Digital Signage can be used in Health include:

- **Education**
  Answer common health and surgery questions thereby achieving improved staff productivity, better patient health and earlier patient awareness of health problems. By having a waiting room digital signage system that displays accurate information about the medical conditions the doctor treats, many of a patient’s questions and concerns can be addressed and satisfied in the waiting room by watching the content that is displayed. Thus both patient and doctor time is saved for other more important discussions. In addition, patients can have something to watch that will keep them entertained and less annoyed frustrated by the long wait times they may be subject too.

- **Informing**
  Ensuring staff, medical students and patients are up-to-date with latest information: e.g. hospitals and surgeries can spend a lot of time creating timetables, only to encounter confusion when clinics or training sessions printed in timetables are cancelled or rescheduled. While e-mail can be helpful, dynamic message boards, updated in real-time, help reach medical staff and students who aren't near a computer.

- **Entertainment**
  One of the biggest complaints that any patient has about a doctors’ visit is the time they have to spend in the waiting room. By installing digital signage systems in their waiting rooms, instead of conventional television, live TV, news, health information and promotional content can be shown to reduce perceived waiting time (wait warping) resulting in happier patients.

- **Patient Waiting Experience**
  If an NHS facility is grubby, and tatty, then patients perceive that hygiene is poor and doctors are substandard. Conversely if a facility/surgery is bright & clean, with up to the minute digital signage that informs and entertains, then patients perceive the doctors to be better doctors, and will take on board any advice they are given more readily.

  Private TV Networks in Patient Rooms: Provide patients with an additional programming choice in their rooms, using a centralized media player that connects to existing TVs across your facility.

- **Image reinforcement**
  Digital signage can reinforce a hospital’s brand with a consistent message while also elevating the overall visitor perception of facilities. Patients and employees alike feel more confident with a hospital that’s up-to-date on technology. In a stressful environment, it helps to have a paperless, clutter-free atmosphere.

- **Emergency Alerts**
  The speed with which a digital signage network can disseminate instant messages throughout a large hospital can be literally a lifesaver should a serious emergency arise.

- **Wayfinding**
  Wayfinding kiosks help patients navigate around a healthcare facility without having to ask for directions, improving patient satisfaction and increasing the chance that they will arrive at their appointment on time. Hospital facilities can be confusing for visitors, especially during stressful times, and existing wayfinding signage can be upgraded to digital. In addition to providing a
better customer experience, the technology allows hospital employees to concentrate on their tasks, instead of on escorting patients and visitors.

- **Making money**
  Doctors can sell space on their digital signage to drug companies, allowing them to promote drugs that are related to the conditions they treat. These doctors are using content that educates and informs patients about their medical conditions, the treatments their practice offers and informative infomercial type programs about a particularly hot medical issue that the practice treats. For example, a general surgeon might choose to utilise his or her digital signage system to provide patients with all kinds of information about illnesses and medical conditions that lead a patient to seek their advice, as well as programming detailing the particular surgical techniques that they are trained in.

This kind of use of a digital signage system has a number of benefits for both patient and physician. The reason for the long waits in most physician’s offices is that they are just not able to efficiently accommodate every patient’s questions and concerns within the 15 minutes they are usually allotted to do so. These days medicine is much a business as any other industry, and often a doctor has to see an allotted number of patients every day to make ends meet.

- **Emergency Overrides**
  The speed with which a digital signage network can disseminate information throughout a large hospital can be literally a lifesaver should a serious emergency arise. Fire evacuations are just one example, when instructions must be conveyed quickly, clearly and with authority.

- **Restaurant / Canteen Menus**
  Whether the students are standing in line or sitting down to eat, digital signage is a great way to catch attention and for example post daily specials in addition to the standard menu. It is also used to promote the Government’s campaign to encourage healthy eating.

- **Communication**
  Strategic placement in key gathering areas ensures your guests get updates on emergency information, special classes and services, chapel hours and other relevant information — without having to pick up reading materials or search the bulletins. Flat screens in a public environment are still a novelty, particularly in an educational environment, and by their use alone audience attention is captured. Interactive components like touchscreen kiosks can be useful in wayfinding; if a patient or visitor gets lost among the maze of hallways, they can stop to print a map that illustrates how to get from A to B. Patients with visual or hearing impairment will have an easier time obtaining information without assistance.

- **Promotion**
  Particularly relevant for large health partnerships, e.g. by installing digital signage with large LCD or plasma screens around a site, upcoming fundraising events can be publicised. Screens can be mounted anywhere staff and patients frequent: wards, cafeterias, lobbies, waiting areas and corridors, and are far more eye-catching than posters taped on walls. Services offered in private practices can also be promoted.

- **Cost savings**
  Static posters and banners are expensive to print and renew on a regular basis to keep the content relevant. With digital signage no printed material is necessary, so both time and cost savings can be made, and the environmental impact is minimised.
• **Instant Messaging/Paging**
  Messages, updates and alerts can be easily disseminated to staff and patients instantly. e.g by using ONELAN’s Ad Hoc capability.
3 Case study examples

Magpies Dental Practice using Digital Signage for:

- Communication
- Cost savings
- Entertainment
- Promotion

Magpies Dental Practice is a modern busy UK National Health Service and private practice, offering a range of treatments and holistic facilities to its patients.

The practice was looking for a way to communicate other services and treatments available which patients were not always aware of. They are now able to communicate cosmetic dentistry offerings such as Tooth Whitening, White Fillings, Veneers, Dental Implants and Smile Makeovers.

Magpies realise that informative advice to a captive audience benefits patients, and by using digital signage to do this differentiates them from other practices. The dental practice staff can log in via an Internet browser and navigate to change a layout, add content or send a message. This is customisable, flexible, and suits the way they work. They are able to communicate new treatments and facilities while showing up-to-date news, weather and TV. Layouts are scheduled to times to suit the audience. For example CBeebies is shown between 3:30pm – 4:30pm when most of the patients are school children, reverting back to BBC News 24. Magpies Dental Practice also find the ability to add PowerPoint™ files to a playlist particularly useful. Content does not necessarily need to be updated that frequently due to the majority of patient’s appointments being 6-months apart. It is important though to have a healthy playlist of animations, video clips, images and messages – to keep the display interesting.

Two screens show the same content in two separate waiting rooms representing an ideal opportunity for education and informative news to be absorbed by the visiting patient. The Media player is connected to their current network and uses a reserved IP address. Administration of the ONELAN system can therefore be accessed from any network PC.

Access to the ONELAN media a player is via the reception PC. A series of shortcuts enable a quick message to be sent to the screen as well as uploading multiple content using the FTP shortcut folder. Because the ONELAN system is accessed via any Internet Browser, these shortcuts are also replicated on the office PC in the surgery basement. Content runs on a loop but looks fresh as the layouts changes regularly. A TV channel shown in a zone always makes the screen look current.

Patients can be seen looking at the screen while waiting to see the dentist. The result is a soothing distraction before their appointment. Cost benefits are not measured purely from the up-sale of content on the display screen, however increases in revenue and questions being asked relating to the content seen on the screen have been seen compared to leaflets and more traditional methods of information dissemination.
Symes de Silva & Associates
Dental Surgery using Digital Signage for:

- Communication
- Entertainment
- Promotion

Symes de Silva & Associates is an established dental practice located in Wellington, New Zealand. The practice aims to provide the highest standards of dental care available to their clients by offering an extensive range of services and employing modern technology. With nine Dentists, five Hygienists and one Specialist Oral Surgeon, Symes de Silva is a busy practice, open for long hours and seven days a week.

In 2009, Symes de Silva recognised a need to streamline the way in which information is provided and displayed to clients in their busy reception area. Digital signage was chosen to display relevant and up-to-date information to clients and staff.

The new signage needed to successfully integrate with Symes de Silva's existing network, have the ability to cope with various content types, refresh instantly and most importantly be easy to use by the many administrators at the practice.

Symes de Silva's requirements included:

- indoor signage to display the names of associates, power point, Television feeds and news and weather to entertain clients waiting in reception; as well as
- ground floor signage to display the practice's services to passersby on the street.

A wide range of content is displayed throughout the practice. The three 50" plasma's in reception provide information to clients arriving and waiting in reception; this includes the names of associates and the services offered, as well as entertainment such as television, news and weather feeds.

The ground floor display is directed more towards passersby on the street and includes PowerPoint presentations and information on the practice’s services.

Symes de Silva have improved the efficiency of communicating information to their staff and clients. In addition, by using the digital signage to entertain, the waiting experience for their clients has greatly improved.
NHS Rotherham using Digital Signage for:

- Communication
- Education
- Entertainment

With a budget of £436 million NHS Rotherham are responsible for planning and delivering health services and ensuring that local hospital services and specialist treatment are available for local patients who need them and that they offer value for money.

Services are commissioned from GP practices, opticians, pharmacists, hospital trusts, mental health care services, independent and voluntary providers. Performance is managed by the Yorkshire and the Humber Strategic Health Authority. Approximately 1,800 staff are employed serving a population of 255,000 people.

Network QTV is the NHS IT network that distributes information (services, signposting info, health targets e.g. cancer, obesity, breast feeding) to health centres, surgeries, hospitals and departments etc. Originally the health channel produced programmes, using information supplied by the NHS Rotherham, and then sold it back to them. This constituted a poor use of resources, and the use of DVDs instead was unsuccessful as these take too long to make and gain approval.

NHS Rotherham established that Digital Signage was the best solution, and selected ONELAN. Two ONELAN Net-Top-Box (NTB) 5005s are installed in their inhouse studio: one broadcast publisher box, and one to build programmes on. Eighteen ONELAN Century NTB subscriber units are installed in health centres, surgeries, hospitals and departments etc. There is also use a Dell Optiplex FTP server.

Programmes are generated and then uploaded overnight across the entire network to ensure there is new content up and running daily.

Series of schedules are produced for all the subscriber NTBs that last approx 6 hours, and are repeated in a loop, interspersed with ‘bumpers’ which signpost people to different services e.g. a 10 minute slot on services available to carers. On each screen there is also an RSS feed showing News 24, a side bar with latest news (controlled centrally by NHS Rotherham’s communications team) and a ticker tape with Ad Hoc content that is updated locally. The background comprises an animated movie file that moves and scrolls through blue, green and red. There is a clock resident in the lower right hand side of the ticker tape bar.

All digital signage content generation is done centrally by two full time staff. Programming of this is paid for by the project lead; running costs are covered centrally, and locally. In addition GPs are encouraged to at least contribute to the cost of the screen and NTB subscriber unit, to ensure they get buy in for the digital signage. Health professionals and doctors who want videos producing e.g. on bowel cancer act as clients of the digital signage content design department.
Diaconesse Hospital
using Digital Signage for:

- Communication
- Wayfinding

The Diaconesse hospital is a medium-sized regional hospital located in Zeist in the Netherlands with outpatient clinics in Meppel, Steenwijk and Vollenhove.

ONELAN digital signage was chosen as the best solution for communicating with patients and to control the flow of patients coming into the hospital. The hospital wanted to operate more efficiently; prior to the digital signage installation, it was a full time job for one nurse to manage the patient flow. In addition, Diaconesse wanted to make Wayfinding around the hospital as straightforward as possible.

The digital signage needed to be able to display information clearly and simply to patients who are not only unwell but may also be e.g. elderly or shortsighted. In addition the information needs to be very easy to assimilate, as patients will just glance quickly at it. Considerable research was undertaken with a communications advisor to establish the best background colours and fonts to use for this particular audience.

Nineteen ONELAN Net-top-box (NTB) 510 and (NTB) 5000 players are installed, driving 42” screens.

The screens display just one zone for clarity, the only additional feature being an html clock.

The system is managed by ADL in the Netherlands and a local dealer. Daily content is changed by the nurses themselves. e.g Availability and schedules of doctors, reasons for doctors’ delays or absence, and patient appointment times. This is achieved using ONELAN’s Ad Hoc capability. Ad-Hoc is a simple facility for local changes and input of messages, announcements, visual paging, table data, TV selection and layout changes.

The ONELAN digital signage has considerably improved communications between the hospital and its patients, as well as reducing costs, as there is no longer the need for a nurse to manage the patient flow.

Touchscreen Directories and Wayfinding Systems: appointment on time. Hospital maps can be updated remotely, allowing you to manage an entire network of hospital directory kiosks from a central location.

Patient Registration and Check-In Kiosks let patients use self-service kiosks to fill out new patient profiles, update their insurance and contact info, and schedule future appointments with health care providers. These touchscreen medical kiosks make life easier on your staff, while reducing wait times for patients. Hospital kiosks can also integrate with larger self-service initiatives and patient registration systems, such as those that provide web-based appointment requests and insurance claims.
NHS South Birmingham using Digital Signage for:

- Education
- Entertainment
- Emergency alerts

NHS South Birmingham wanted a method for delivering messages to the patients at 65 surgeries across South Birmingham from their Head Office in Kings Norton. ONELAN Digital Signage was chosen to achieve this.

The Trust had the following key objectives for their digital signage:

**To Educate**
Answer common health and surgery questions thereby achieving improved staff productivity, fewer visits, better patient health and earlier patient awareness of health problems

**To Entertain**
Reduce perceived waiting time to achieve happier patients by showing live TV.

**In an Emergency**
Showing of Instant messages

ONELAN Century NTB 615s have been installed in all 65 of the doctors' surgeries, and three ONELAN Millennium NTB 5000s have been installed in the Head Office.

The content on the Century Series 615 Net-Top-Boxes (NTBs) in each of the surgeries comprises a combination of the following:

- Practice updates
- Local RSS News feed
- Practice messages & alerts
- Government health videos

It can be made relevant to the day’s surgery and easily changeable at the location by the receptionists. Ad Hoc messages are also set up so the receptionist can quickly inform the patients if the surgery is on time or not. This service gives the patients a relaxed signage system with pertinent information. There is also an override facility. If there is an incident e.g. the recent swine flu outbreak, then HQ can override scheduled content to show the emergency content.
The main implementation issues involved included:

Overcoming security issues
With the obvious issues of patient confidentiality, security was of paramount importance. With the excellent security features of ONELAN's NTBs any concerns were soon overcome. ONELAN is even approved for use in high security applications such as finance in Government and Banking.

Overcoming user reluctance
It was essential that the NTB software interface was simple enough for NHS staff to use so they could update the information being displayed on the Net-Top-Boxes with minimal training. At the same time, the software had to be sophisticated enough for the signage requirements of the Trust Head Office.

Surgery Network Conformity
As every surgery has its own non standardised network, while the Trust Head Office is able to publish information on all the NTBs in every surgery, it is unable to ‘see’ whether each NTB is working properly, and whether there are any faults. To overcome this constraint, OneMedia Services act as a go between, as they monitor all the local NTBs, and forward this information via email back to the Trust Head Office.

Sussex Partnership using Digital Signage for:
- Communication
- Education

ONELAN Digital Signage has been installed in Sussex Partnership’s Education Centre in the Medical school and is used for training both medical professionals & students. It is used as a display for what’s going on in the building where there are three main bookable rooms.

The screen has a central zone comprising a table containing the booking details for each room. With the date and time at top, the left hand side of the screen scrolls images of hospital and local area.

The content is all controlled by one individual and has made it much easier to effectively manage timetabling and last minute changes.
Swiss Clinic: Microelectric Hearing Aids Ltd

using Digital Signage for:

- Education
- Information
- Entertainment
- Promotion

Microelectric Hearing Aids Ltd have a group of five hearing clinics in Switzerland.

They wanted to make their clinics appear more prestigious, and at the same time have a means of communicating information to their patients as they waited. While their staff are good doctors in their field of hearing, they lacked the ability to promote their services and particular products to the captive audience of waiting patients. With waiting times of 5-10 minutes, the clinic wanted to entertain patients, and make them aware of additional and special products.

Microelectric established that digital signage was the best solution for their needs, and selected ONELAN as the most suitable system.

Five ONELAN Net-Top-Box Century 510s have been installed driving 40” LED screens, one in the waiting room of each clinic.

The content is in both Swiss and English, and comprises:

- Still Images
- RSS newsfeed
- Promotional videos
- Client appointment timetables

Promotional videos are supplied on a regular basis by manufacturers of hearing aids and accessories, and Microelectric choose which ones to use. These are then rendered and uploaded to the media players.

All the content is updated remotely via internet (using FTP and HTTP) by Sinform GmbH, who both supplied and now manage the digital signage for Microelectric.

End result

Microelectric are very happy with their digital signage, and have noticed an uplift in sales of promoted services and products e.g hearing aid batteries and cleaning products.
4 Getting started: Concerns

With all technologies new to a specific market sector there are concerns surrounding adoption. Digital signage is no exception.

**Too expensive**

This is no longer the case. Screen and computing costs have fallen dramatically over the last five years. Also look for digital signage manufacturers offering free software updates and free support.

**Too difficult**

No longer. A good digital signage solution should be easy to use by even non-technical users, with very little work being required of the staff. The ease of use will encourage buy-in of staff to the new system; with digital signage, it is easy to dynamically change the content with nontechnical staff, and customise different screens in different locations.

Fresh and regularly updated content is essential to maximise the value of a digital signage system, so a dedication to content renewal needs to be established at the outset. A good digital signage system will be easy and intuitive to use for real-time updating and scheduling.

The content management system for each digital signage solution will also vary with some being more simple than others; while some systems can offer much greater flexibility they may be more complex to use.

The content management solutions will also vary in terms of how much you can change within a template. Most solutions will allow a school to create their own designs with other solutions proving fixed templates allowing only changes to content.

**Only a few trained individuals will be able to use it**

To be adopted successfully by all, a good digital signage system has to have a simple, easily accessible web based interface so anyone with appropriate permission can upload new information or content without any training whatsoever. Thus the hospital patient queuing system or hospital TV becomes a live instant trading place for information and a hub central to a hospital or doctor’s surgery.

**Why not DIY?**

If it is that simple why not do it yourself? There are several reasons:

- It can become a project for an already overstretched IT dept
- The time cost will be greater than the result
- The quality will be lower
- There will be a single point of data entry by an expert versus access for many.
- Ongoing support and maintenance will be a problem
Security

Will the system be open to abuse for example patient confidentiality is a key issue, combined with the volume of sensitive data that needs to be secure yet readily accessible. Any good Digital Signage system should have sufficient password protection and encryption techniques such that unauthorized users cannot gain illegal access or tamper with content or the system in any way.

The time and financial implications of having good professional content that is updated regularly

Considerable time can be saved by communicating with digital signage e.g using instant messaging (see below). In addition, by making good use of digital signage e.g to publish information on forthcoming events, or by using a screen in reception with information on the institution, or by publishing regularly updated menus in a hospital cafeteria, significant printing cost savings can be made as fewer brochures, leaflets and posters will need to be printed.
5 Content is King – Ways to achieve this on a budget

Everyone recognises that content is king and keeping content fresh and relevant to your target audience is a key aspect of any digital signage installation. However making content can be expensive so it is essential to develop a strategy that is both low cost and effective. It is essential to have to have a good editorial system in place and be able to accept content from people all over, automatically.

Sources of content include:

- **Instant local messaging**
  Staff should have access to a simple easy to use facility that enables them to communicate new information instantly. For example input of messages, announcements, visual paging, table data, TV selection and layout changes. ONELAN’s tool for this is named Ad Hoc. A further use of this tool is localization of content e.g modification of the screen to show the name of the department while retaining the same design elsewhere.

- **Websites**
  RSS feeds from either the institution’s own or other relevant third party websites can automatically load news to the screen, in addition to daily announcements and hospital news. A weather feed can also be incorporated. By using the web zoom facility, it is possible to shrink a web page down to 10% or enlarge by up to 1000%; web pages can also be cropped to show just the relevant part.

- **Existing Content**
  Freely available existing content e.g Powerpoints, videos from your institution’s website, or other relevant sites should be able to be reused.

- **Video (Free TV or Live Camera)**
  TV. Programmes can be captured simply with a TV card in e.g a ONELAN Net Top Box, or streamed to show live tv everywhere on a network using e.g ONELAN’s ITPV. In an institution, images and live footage of graduation and award ceremonies etc can be shown on screens around the campus.

- **Content residing in external systems or databases**
  External content that can be brought in live from an external system, with specific data distributed to different workstations on a network through one channel using e.g ONELAN’s Data Collection Engine (DCE).
6 Getting started: questions to ask

Before you start it is essential to establish your budget;

- Has a separate budget been set aside, or will this come out of an existing one?
- What are you and your stakeholders’ intended goals for digital signage: Communication, entertainment, education, publicity, marketing?
- How will you use the digital signage?
- What do you want to communicate and to who?
- Who are the Internal customers: staff?
- Who are the External customers: patients, visitors, contractors?
- Who will use the digital signage? Staff, IT department?
- Once these questions have been answered, how many screens and players do you need?
- Will you need to retrieve data and feedback from doctors, consultants, nurses?
- Do you have existing systems that you need to integrate your digital signage with?
7 Planning your digital signage system

In the context of a health environment, a digital signage system at its simplest can be one or more display screens linked to one or more players such as a ONELAN Net-Top-Box (NTB).

In practice, it is likely to include a network of DS players linked to multiple display devices. The complexity of the system will be driven by the size of the hospital, dental practice, medical school etc, the requirements of the stakeholders and of course budget.

As requirements will change over time, it is important to choose a flexible content delivery platform that allows for growth at a low cost.

6.1 Stand Alone Implementations

If you only intend to have one or more independently managed screens you will be setting up one or more Stand Alone systems. In this case the considerations include:

- a. Will user access be direct via a cross over cable or via a network?
- b. Will the player be located at the screen or remotely?
- c. Where will the screens and Players be located; how will cables be run, and is there adequate ventilation?

6.2 Local Area Network (LAN) Implementations

For a multi screen network with one or more channels of content a network set up is required.

Typically this will mean implementing a Store and Forward Digital Signage system. This means that content is created by a central HQ designer, and published to the network for Players to then collect, store and playout. All administration is via a webuser interface(HTML/HTTP) and FTP access will be required from Subscriber to Publisher units to access content. In this scenario the considerations include:

- a. How will content be managed?
- b. How will content be distributed – via a network or using 3G?
- c. Will TV and video content be streamed; in which case the network will need to be multicast (see below: Implementing IPTV Streaming)?

6.3 Wide Area Network (WAN) Implementations

This is the same case as for a LAN implementation except that now the players may be at remote locations and hidden behind local firewalls. This should present no problem as long as the IT architecture is a pull model. This means that content is not being pushed down to the player; rather the player downloads. The player will only download content that has been changed. This method maintains networks security.
8 Why ONELAN?

The ONELAN Digital Signage and IPTV products provide a toolkit for achieving a solution for your communication needs:

7.1 Net-Top-Box Publisher Subscriber Network

7.1.1 Publisher (P)

- A Publisher is a media player that has been configured as a Master. This unit station publishes all information on the layouts and schedules and deposits it into a specific directory (channel), which can then be picked up by the Subscribers.
ONELAN’s Net-Top-Box is a browser based media player for design, scheduling and preview of multiple content channels for network store and forward delivery that are multi-zone multimedia and dynamically updateable with live content or external data.

7.1.2 Subscriber (S)

- A Subscriber is a media player that has been configured to be a Slave. The Subscriber is told the location where layout and schedule information has been deposited by a publisher. The Subscriber will then check the location periodically (user configurable) and will download any new data to display.
- ONELAN’s Net-Top-Boxes are a range of store and forward digital signage media players designed for 24/7 operation with options for local TV reception, IPTV Stream In decoding and Touch / GPIO interactivity.

7.1.3 Digital Signage Manager (DSM)

- The DSM is a multi client web appliance for live monitoring, remote configuration/maintenance of an NTB network. Historical records of NTB status and media playout are maintained in the inbuilt database for later audit and analysis. It is ideal for monitoring Channels of NTBs. The progress of NTB Channel Manager Publish and Subscription operations can be easily monitored using the DSM Standard Report. This can also be customised and sorted Tabular to match operational requirements. For example, Alarm Summary Reports can be generated – outstanding alarm conditions including overheating, loss of time synchronisation, errors in the NTB Publish and Subscription mechanism, low disk capacity, and other physical data.

7.1.4 Data Collection Engine (DCE)

- ONELAN’s Data Collection Engine (DCE) Framework enables organisations of all sizes to unlock the value of previously inaccessible data. Information held in spreadsheets, databases and business systems can now be easily repurposed for use on Digital Signage, web pages and other rich graphical displays.
- The DCE framework enables data from previously disparate and inaccessible systems to be retrieved by using any number of the available Business Connector plug-ins. Each Business Connector enables access to a particular business system or information source, managing the entire connection process without any user involvement. Once installed, each Business Connectors data can be formatted and displayed on your Digital Signage, or repurposed for display on other web enabled devices.

7.1.5 Omniserver IPTV Streaming (IPTV)

- The IPTV Omni-Server is a single box streaming solution for networked delivery and storage of video content via Ethernet networks. It provides a number of key functions within one appliance, firstly acting as an IPTV TV gateway which can take in Digital free-to-air TV broadcasts (DVB-T/Freeview or DVB-S/FreeSat) and re-broadcast out several TV channels onto a network. Any device on the network can then play back the live TV stream using a desktop PC TV software player, or a media player such as a ONELAN Net-Top-Box. A key benefit of this feature is the reduction in RF coaxial cable wiring required. The IPTV Omni-Server is compatible with
ONELAN NTB media players, and with its web browser interface is accessible from anywhere on a network.

- Digital TV broadcasts require TV Tuner cards. The number of cards (and thus slots to accommodate them) vary with the number of TV channels required to be simultaneously viewable. Each tuner card can provide 5-10 TV channels but multiple tuner cards may be required to deal with 5-10 TV programmes spread across different broadcast frequencies.
- Furthermore, each Analogue TV Encoder requires a card slot. Thus the IPTV Omni-Server is made available in a 2 slot or a 6 slot configuration to accommodate different requirements.
- The Omni-Server may be operated in a ‘Carousel mode’ enabling it to record all selected Channels (TV or Radio) for a given period of time in the past, present or future. For example the entire UK FreeView set of channels can be recorded simultaneously. As the disk becomes full, older programs are deleted. The operator can now identify programs from the past and move them to a 'keep' or 'transcode' folder for delivery to the Video Library Server (VLS) for storage. VLS is a software product that installs on a windows Server and provides a video library searchable on program metadata.

9 What is the value of IPTV in Healthcare?

By using IPTV streaming in conjunction with digital signage free-to-air video content can be delivered around a school or campus via Ethernet networks, to enhance the learning experience. Educational TV, live and recorded video content can be delivered to the classroom direct to student PCs.

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This is particularly useful where there is a requirement to record free-to-air programs in the past, present or future e.g in schools and colleges where educational programs are used to enhance the curriculum and engage students.
8 About ONELAN

ONELAN develops network appliances for standalone and end-to-end Digital Signage and IPTV network solutions. The Net-Top-Box is a multimedia, multi-zoned solution capable of displaying stored media and live media e.g. RSS feeds, web pages and broadcast or locally streamed TV. With a browser based user interface, the system is fully multi-lingual including all main European languages. Further members of the product family cater for Enterprise network management, Touch applications and integration with external data sources.

ONELAN has ten years experience solely in Digital Signage & IPTV and more than 12,000 players deployed worldwide driving thousands of screens.