White Paper:
MAXIMIZING THE VALUE OF DIGITAL SIGNAGE

A strategic approach to technology selection, deployment, management and ROI analysis.
EXECUTIVE SUMMARY

Digital signage is rapidly becoming a mainstream technology, with the global market for digital signage expected to reach $13.2 billion by 2016, according to research firm MarketsandMarkets. Intel estimates that 22 million digital signs and 10 million media players will be in use worldwide by 2015.

Retail is at the forefront of digital signage adoption. Digital signage enables retailers to create engaging in-store touchscreens where product comparisons, informational videos and product locations are displayed based upon a wide range of criteria. Real-time updates and promotions can have a measurable return on investment (ROI) based upon purchases during a given digital signage promotion period.

But retail is not the only application of digital signage. Digital signage can be used to display schedules and other information, guide people through a location or event, and entertain customers while they wait with real-time updates of news, weather, sports or entertainment — without competitor advertising. It can also be used to communicate with employees through high-quality video and interactive multimedia content.

Although organizations are showing strong interest in the use of digital signage, actual implementation of the technology remains low. For example, the 23rd Annual Retail Technology Study by RIS News found that only 10 percent of retailers have up-to-date digital signage technology in place. Thirteen percent had started but not completed digital signage implementations, and 23 percent planned to begin deployments within the next 12 to 24 months.

Significant technical challenges often prevent organizations from taking advantage of digital signage. This whitepaper will examine those challenges and offer a strategic approach to designing, implementing and maintaining a robust digital signage solution that will deliver maximum ROI.

UNDERSTANDING DIGITAL SIGNAGE TECHNOLOGY

Digital signage uses flat-panel LED, LCD or plasma monitors to display high-definition video. The displays are often coupled with audio equipment to create a multimedia experience.

Although content can be created, deployed and managed manually for each sign, the process can be complex and time-consuming for a large, dynamic digital signage deployment. A centralized Content Management System (CMS) allows the messaging to be updated as frequently as needed and customized according
to location, time of day and other criteria. The CMS also allows for uniformly formatted content across all customer locations! (i.e., create content once, deploy to multiple locations) Content and program scheduling information are sent via the wide area network to media players attached to the digital signs.

Media players range from multi-output and performance players (which provide server-grade processing power), to ARM-based players and Apple TVs that have processing power comparable to a smartphone. At the midrange is the so-called “standard player,” which is comparable to a desktop PC. There are also embedded chip players that are built into the display.

As with most technologies, price goes up with processing power and functionality. The choice of media player depends upon the size and resolution of the displays, whether animation, video or multi-zone applications are employed, the file types to be used, and other criteria. If the media player is not up to the task, customers will experience poor image quality and disrupted video playback. However, standard players will provide high-quality animation and hi-def video up to 1080p — suitable for most applications.

Players can be mounted behind each display or aggregated in an Audio/Video (AV) rack in the back of the store/office with wiring run to the displays. A site server can be beneficial in large single-site deployments with dozens of displays. Content is downloaded once to the server, which delivers the content to each player. This saves bandwidth and lowers costs by reducing the processing power requirements of each player.

**THE TOTAL SOLUTION**

A web-based content management system offers a platform for remotely creating playlists and distributing content to the right displays at the right time, simplifying management of even the largest digital signage network. Activity can be logged to a central database for tracking usage and creating customizable playback reports.

Although standalone displays provide value, savvy organizations are looking to integrate their digital signs to social media sites, dynamic information sources and e-commerce sites. Digital signage can also be combined with mobile marketing to push personalized content and promotions to customers’ mobile devices. These integrated services need a robust network that connects the players, CMS and content creators. This network can be a dedicated digital signage network, or the corporate network. Wireless connectivity in particular must be carefully engineered to avoid radio interference and ensure strong security.
Digital signage solutions that are to be deployed outdoors require adequate protection from the elements and possess high brightness and contrast ratios to provide visibility in sunlight. Outdoor media players should be housed in a climate-controlled compartment to ensure reliable operation in all weather conditions.

Touchscreen displays offer a compelling experience by inviting customers to engage with the content. Consumers have become comfortable with touchscreen functionality on their personal devices so it makes sense to mimic that functionality. Digital signage solutions that incorporate interactivity require a standard media player for single-touch displays and a high-performance media player for multi-touch functionality. Solutions that off-load interactivity to the customer's mobile device can use lower-end media players.

It is also possible to incorporate printers, keyboards, cameras and other devices into digital kiosks. These solutions require a media player that supports the various devices.

SageNet offers a web-based Digital Signage Management Tool and hosts the media library and playlist definitions in its state-of-the-art Network Operations Center (NOC).
BANDWIDTH CONSIDERATIONS

Early digital signage deployments relied on DVD players - and even VHS players - attached to television sets playing quickly-outdated content. Those days are long gone. State-of-the-art digital signage is versatile, relevant and extremely network-dependent. The level of bandwidth required by today's digital signage systems varies however, with the dramatic expansion of mobile devices, in-store applications, and more and more sophisticated backend systems, bandwidth has become a precious commodity.

The bandwidth required for digital signage is driven by a number of factors including the type of content delivered (e.g., video, audio, still, HD or SD), the level of interactivity, the scope of deployment, and how often content is updated/refreshed. In many digital signage deployments, the real-time streaming of content is not required, minimizing the bandwidth burden placed on already overtaxed networks. In these cases, content is downloaded, often overnight, and stored on a player attached to, or within, the flat-panel display. The content is then played-back on a pre-defined schedule, and updated again the following evening when bandwidth demand is typically lower.

Other techniques can also reduce bandwidth requirements, such as streaming reduced-resolution video content to only a portion of the screen and featuring non-streamed content such as ads and tickers surrounding the video. Multicast capabilities can also dramatically reduce overall strain on the network.

Interactivity is increasing the effectiveness of signage, while also adding to the need for greater bandwidth. Interactive kiosks can offer touch screens through which the consumer can gather tailored information, or the kiosk may even provide a video link back to a live off-site expert. Displays can even be paired with cameras and applications that can recognize demographics of individual viewers and can, in real-time, display tailored information.
CREATING SIGNAGE SYNERGY SITE-BY-SITE

Since networked digital signage is typically managed from a central, often cloud-based solution, the WAN connection to each store is crucial. Every site is unique, and for large multi-site retailers with hundreds or even thousands of locations, a hybrid network is an essential approach to overall network strategy. Urban locations may have a variety of WAN connectivity options.

4G/LTE cellular offers new options to deliver broadband to locations not served by wired and cable connectivity. And for those sites beyond the reach of 4G networks, the latest satellite technologies offer fast, secure and cost-effective bandwidth virtually anywhere. Both of these access technologies offer the added benefit of rapid deployment, allowing quickly expanding enterprises to hit growth targets without waiting for providers to physically run wires, fiber or cable to a new location.

In fact, many large multi-site enterprises are deploying primary terrestrial networks with satellite or cellular-based secondary or even tertiary networks that offer auxiliary bandwidth when needed, while providing a secure back-up network to support critical systems for disaster recovery and continuity of operations initiatives.

During normal operations the store’s terrestrial network can serve as the primary link for all point-of-sale and back office traffic while the satellite provides multicast delivery of content for in-store digital signage displays. In the event of a terrestrial link failure, the digital signage application reverts to cached content, while all critical point-of-sale transactions and back office applications are automatically re-routed over the always-on satellite connection. Non-business-critical digital signage bandwidth is used to support store operations in case of a terrestrial network outage, thus reducing total cost of ownership while providing 100% network availability.

DEPLOYMENT AND MAINTENANCE

Multisite digital signage deployments are complex and require careful planning and project management. In addition to procuring, configuring and installing the displays and related equipment, digital signage projects often include telecommunications, networking, data cabling and electrical tasks. As a result, the activities of multiple vendors and contractors must be coordinated across geographically dispersed sites.

Because digital signage incorporates computing technology and data network access, IT is often assigned the task of managing such deployments. However, IT personnel who are not specialists in digital signage may run into complications and quickly become overwhelmed when a project of this magnitude is added to their day-to-day duties.

Turnkey digital signage deployments offer a better approach. In this model, a systems integrator provides end-to-end services, including design, implementation and project management. The technology provider should have expertise in digital signage technology as well as a solid foundation in wired and wireless networking and WAN communications; ideally, the provider will also offer data cabling services. The technology provider will also maintain oversight of the entire project and ensure uniform installation according to the design parameters.
Ongoing maintenance must be considered with any digital signage rollout. Equipment failure and communication problems will occur, and system updates must be applied from time to time. Because digital signage is a customer-facing technology, any display errors or breaks in service must be addressed and resolved quickly. A service provider that offers remote monitoring, management and troubleshooting can address problems immediately.

SIGNAGE SERVICES
SageNet has more than 25 years of experience implementing systems across enterprise networks. We leverage this experience and our technical resources to design, deploy, monitor and support multisite digital signage solutions. Our services include:

– Configuration
– Onsite Installation
– Cabling
– Data Network Provisioning
– Help Desk Services
– 24x7x365 Remote Monitoring
– Nationwide Break/Fix Maintenance

MANAGED NETWORK SERVICES
The unique environmental characteristics of each site make it vital that a digital signage solution provider is technology neutral regarding WAN connectivity to ensure the best connectivity to every site. The centralized nature of the distribution of content also makes it mandatory that your solutions provider understands the interrelationship between WAN, LAN, systems, and applications.

Some of the criteria that enterprise-level executives need to be mindful of when choosing a managed network provider include:

• Scalable to support small to large, multi-location, multi-vendor networks
• “End-to-end” solution with automated processes and procedures
• Single point of contact, problem ownership and resolution, optional operating system and configuration downloading, and second- and third-level support
• 24x7 support coverage with redundant Network Operations Centers
• Service Level Agreements on availability, mean-time-to-repair and other parameters that help you meet your business goals
• Standard and customizable performance and problem management analysis
• Centralized architecture and delivery
• Fast, efficient and easy customer implementation

Some of the other considerations include:

• Experience - Have they deployed and supported large networks in the past?
• Support - Are they set up and willing to work with your company to deploy custom applications or specialized solutions?
• Business Continuity - Can they offer a truly diverse network path in the case of outage?
MEASURING TCO AND ROI

As with any technology investment, it is important to understand the total cost of ownership (TCO) of digital signage. The upfront investment in equipment can vary greatly depending upon the type of content to be displayed and whether features such as interactivity are desirable. More complex solutions will likely have higher implementation costs as well.

Digital signage software comes in a wide range of packages, from traditionally licensed applications to cloud-based, Software-as-a-Service solutions that are available for a subscription fee. The cost of content development will depend upon whether it is developed in-house or by an agency, how many content assets are needed, and how often it is updated.

TCO is one variable in the ROI calculation. In order to determine the ROI for a particular time period, TCO must be calculated over the same period. This would include the initial investment and recurring costs for software licenses or subscriptions, content creation, telecommunications, network operations, and ongoing maintenance and support.

The other variable in the ROI calculation is the value digital signage brings to the business. This could include reduced costs for traditional signage and other forms of marketing as well as increased sales.

Maximizing ROI involves minimizing TCO and maximizing the value of the solution. There are tradeoffs, of course. If skimping on equipment, software and content development results in a poor-quality customer experience, the deployment won’t deliver the desired results and the cost savings are meaningless.

CONCLUSION

Digital signage solutions are much more than large displays. There are a number of components that must be carefully selected and deployed in order to maximize the value of the solution. Media players form the core of the technology — they determine the type and quality of content that can be displayed. But factors such as network connectivity, cabling and deployment options, environmental conditions, software, and peripherals must also be considered, along with the ongoing maintenance and support of the solution. Careful consideration must also be given to how the digital signage solution impacts other systems and applications vital to store operations.

Moreover, digital signage success is ultimately about ensuring fresh, compelling content is delivered to, viewed by and engages the right audience at right time. This requires the orchestration of multiple disciplines within the organization, and the support of variety of external resources.

In many organizations, neither the marketing department nor the IT department has the knowledge and wherewithal to spearhead a multisite digital signage rollout. This is where the expertise of a systems integrator can be invaluable. The right technology partner can coordinate the myriad vendors and activities involved in a digital signage implementation, and ensure that the project stays on time and within budget. The solution provider can also offer sound advice and ongoing maintenance and support to minimize the cost and maximize the value of the digital signage solution.
ABOUT SAGENET

SageNet designs, implements and manages fast, secure and reliable networks that empower organizations to achieve their core business objectives. Formed by the merger of SageNet, founded in 1998, and Spacenet, founded in 1981, today’s SageNet offers a uniquely broad and deep understanding of local and wide area networks, backed by a proven track record of deploying customer-focused technology solutions. SageNet manages communications at more than 160,000 locations for many of the nation’s leading retail, healthcare and financial services enterprises, as well as energy companies, public utilities, lotteries and government agencies.