Large-Scale Digital Signage Deployments

INSIDE: Everything changes when signage networks are scaled to many locations. Learn the best practices for planning and deploying digital signage on a large scale.
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Cisco is the worldwide leader in networking that transforms how people connect, communicate and collaborate.

The Cisco Digital Media System enables organizations to create, manage and access compelling digital media to easily connect customers, employees, partners or students—anywhere, anytime. It is a flexible and comprehensive solution for publishing dynamic content to both on-premise digital signage displays (Cisco Digital Signage) and the desktop (Cisco Desktop Video).

Using the network as the platform, the Cisco Digital Media System provides customers across a wide variety of industries—financial services, retail, government, education, healthcare, sports, safety and security, entertainment, and transportation—with innovative tools for marketing and branding, sales, education and training, communication and collaboration.

Digital Signage Today, operated by Louisville, Ky.-based NetWorld Alliance, is the leading online publisher of news and information on the emerging world of digital signage, dynamic messaging and cutting-edge business communication technologies. The content, which is updated every business day and read by professionals around the world, is provided free of charge to readers.

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Introduction: Why scale?

As the digital signage industry grows, so will the size of the deployments. At one time, digital signage was nothing more than CRT or flatscreens placed in retail stores, each with its own DVD player, which played a mind-numbing cycle of content.

At present, IP networks enable centralized management of digital signage networks, thereby creating the potential for digital signage deployments to grow exponentially. Networks eliminate the use of DVD players by using media players that automatically download content from the Internet and play it on screens at the request of the user. Signage administrators don’t even have to be in the same country because broadband connectivity allows for remote management, monitoring and scheduling for digital signs.

And because of this, the demand for digital signage has increased. Users now not only want a network of screens at their locations, they also want live news feeds, mobile interaction and branding consistent with their stores.

Once users know what they want from digital signage, the question then becomes, “How do you scale a network to the appropriate size?”

Scaling is generally what separates a successful digital signage network from a nifty concept or pilot model. The concept may look good on paper, but it needs to be transferable to multiple locations where the signage will be in operation.

Scaling a network begins with careful planning by the digital signage user. Users must:

• Understand the possibilities of network outside of mere advertising, such as corporate communication and education, wayfinding, interactivity, etc.

• Have a sound content strategy and know what is going to be shown on the screens

• Establish a working relationship with the IT department, which will be operating the network.

Scaling the network to more locations will inevitably mean more challenges. However, the rewards of a large-scale signage network can be highly beneficial to the digital signage user.

This guide will explore the challenges and advantages of scaling your digital signage network to multiple locations. Best practices are discussed by a panel of experts, all of whom have experience with significant large-scale deployments in several different market sectors.

More locations will inevitably mean more challenges. However, the rewards of a large-scale signage network can be highly beneficial to the digital signage user.
Chapter 1: Working on a large scale

What makes up a large-scale deployment?

Many of the digital signage experts quoted in this guide agree that a large-scale digital signage deployment is a network with 20 or more screens that are deployed in more than one location. One of the immediate challenges involved in operating digital signage on a large scale is that the signs have to be networked. Fortunately, digital signage and networking companies have developed solutions for connecting all the screens in a network, no matter how large.

Users must also consider media players and content, as well as devices used to control that content. When you plan scaling these networks to multiple locations, it is important that all stakeholders understand the needs and performance requirements for running a successful, large-scale digital signage project.

“It becomes a different conversation when you begin discussing digital signage on a large scale,” said Thomas Wyatt, general manager of Digital Media Systems for Cisco Systems. “We have good, established relationships from a network technology standpoint with enterprise customers, which is helpful when introducing the idea of digital signage to them.”

Wyatt and his team at Cisco agree that planning for a large-scale deployment begins with assessing the company’s network and preparing it to run digital media content. Wyatt also said that departments within the company must work together toward defining and deploying the digital signage solution, with each department playing a special role in the process.

Differences in large and small scale rollouts

Going with more than one location for your digital signage network will require many things that you will not find with single location rollouts. Knowing these requirements ahead of time will save users time, money and headaches down the road.
“For a small-scale digital signage deployment, it’s OK to operate manually for some issues,” said Cindy Lai of Cayin Technology. However, for a large-scale deployment, you have to minimize the manual operation and try to manage efficiently with a large network.”

Large-scale networks are generally built on enterprise IP infrastructures. These infrastructures are designed to distribute content to multiple (even thousands of) locations over large geographies or over large single areas such as business or college campuses.

“While the fundamentals are the same [content scheduling, tickers and news feeds, proof -of-performance reporting, etc.] the complexities of a large-scale deployment add additional challenges and requirements not found in smaller systems,” said V. Miller Newton, CEO of Netkey. “Installation and maintenance becomes a more significant issue in geographically dispersed systems. The ability to group screens and deliver content that is pertinent to specific geographies or regions plays a bigger role. Reliable communications and connectivity to all screens is a key to the operation and management of a widespread system.”

“The management software you choose must be able to handle a certain number of players and also control players’ status in a proper manner,” said Nelson Chang of Winmate Communications. “A huge number of players might overwhelm the performance of software.”

DT Research is a company familiar with large-scale signage networks. In 2008 the company will assist with a large signage rollout for the Beijing Olympics.

Andy Teoh, product manager, digital signage, for DT Research, said another factor for large-scale deployments is ongoing content management. Small-scale deployments sometimes require staff to physically interact with the display for content updates. Large-scale deployments require more efficient content management from remote locations where a few staff can manage all displays. Again, the network is the means for managing that content, either on site or remotely.
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The major differences in large- and small-scale digital signage networks

1 **Scalability:** There are many hardware/software options to choose from, with some more scalable than others. Any solution should be both simple and intuitive to use, but also scalable, this can allow you to manage a network comprised of just one screen or tens of thousands of screens from a Web browser anywhere in the world, providing you can get online.

2 **Maintenance and replacement:** When managing a small network of signs, a one-to two-year life span for each playback device may not be a real concern. When managing a sizeable network of signs dispersed across many locations, the longevity of the hardware and performance of the software becomes critical. Hardware replacement is not only costly, but the cost of sending installation crews to replace devices or patch software can also mean greater operational overhead.

3 **Content management:** How is each screen managed? When you are operating a small-scale network, it is easy enough to treat each screen individually and deploy content to each screen on a screen-by-screen basis. The moment you scale that up and start to manage large numbers of screens, it becomes important to be able to group the screens together to simplify your deployment process. This could be by store category, then by geographical location, and then perhaps by the location of the screen in the store. You then have the ability to deploy a playlist to the entire network, a specific region or a specific screen in the store.

4 **Cost:** As a rule, the cost per site decreases based on the increased size of your digital signage network, as the hardware costs often decrease with volume. That said, the return on investment as a whole will rapidly increase.

5 **Network infrastructure/availability:** Depending on the geographical location of each screen, the choice of connectivity providers can be restrictive. In some areas an existing broadband connection can be utilized. In situations where you cannot get broadband, you need to consider technologies like ISDN, GPRS/3G/HSDPA or satellite broadband. Regardless of the connectivity, an efficient signage network can be designed with these constraints in mind and still provide the ability to distribute content locally in a manner that is “polite” to the network.

6 **Media sales proposition:** If you end up with a deployment that generates a large footfall and dwell time in front of your screens, then it may become viable to generate revenue from third-party advertisers. The larger the network, the more impressions and the more consideration should be taken into the valuation of content.

7 **Reporting and compliance:** When you have a few sites, it is easy to find out if there are any problems with the hardware and/or content being displayed on screen. When you scale this up, it is important that the digital signage software can manage that for you. It is key that:

   a. You know that the content got to the screens.
   b. You know that the correct playlist is running.
   c. You know that the hardware is performing as it should.

When you have hundreds or thousands of screens, it is important that you can identify quickly those that are not doing what they should be doing and not those that are working fine.

From Kevin Goldsmith, head of global retail and media strategy for Remote Media
Content distribution, which we will discuss in Chapter 2, is also more of an issue depending on the size of the deployment.

“Distributing the large multimedia files becomes more of a challenge as the network scales; keeping control, updating, ensuring compliance [the right DVD in the player, for example] become headaches,” said Simon Cockayne of Hughes U.K. “Larger networks tend to be centrally monitored and updated using modern broadband networks. The largest networks tend to use broadband satellite distribution because the ‘one to many’ capability of satellite makes this increasingly economically attractive at large scale.”

Tom Johnson, president of Digital AV, disagrees. On a digital signage software level, the differences between large- and small-scale deployments should be insignificant, Johnson said. Most robust software systems today are scalable, so the deployment may be for 10 or 100 players with the difference in content control being indistinguishable.

Dave Haar, vice president of Minicom’s digital signage division, said some of the biggest differences between large and small deployments are the logistics of not only getting the hardware to all locations, but also making sure the content is correctly managed so the right video shows up on the right screen.

“The biggest differences are the logistic challenges associated with equipment and infrastructure and the increased capital expenditures involved,” Haar said. Another difference could involve content that needs to be managed differently, based upon geographic and demographic considerations.

Managed services

Many enterprises that deploy large-scale digital signage already have a network that operates their communications and data transfer. However, some don’t have an established network.

“Installing digital signage without an existing network can be cost prohibitive to some, initially,” Wyatt said. “Consider the overhead cost for, say, a bank that wants to add digital signage at 5,000 locations, which would require management of signs at each location. From the CIO’s standpoint, based on these costs, they may not be comfortable managing the technology themselves.”

With this type of operation, a partner would take over the network completely, run it on its servers and ensure that content was successfully sent and running on all screens on the network.
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If the user chooses not use a managed service, its internal departments will be responsible for hosting and managing the network internally. Whether managed internally or externally, the same challenges arise.

Common hurdles to scaling digital signage deployments

Any time you up the ante for your signage network with multiple locations, new challenges are involved. Users today can benefit from the wisdom of providers who have run into these challenges and know the ropes.

Bill Reilly, product manager, digital signage, for Cisco Systems

You’re going to face a challenge any time you are running bandwidth to remote sites. There is always less bandwidth closer to the edge of your network’s reach, so usually the locations that are the most remote are the most difficult to operate.

At the data center or HQ are “core level” sites that are connected to high-speed wide area network (WAN) connections. Once you extend out to the distribution and access level, machines and terminals are getting a smaller version of these connections. Speeds are not as fast, and connections can be patchy.

Points about managed services

- Some marketing organizations will roll out with a small pilot and use Microsoft to do that. However, once they get broader, they will require an on-premise solution that hooks onto existing infrastructure.

- For smaller pilots, managed services tend to be a more popular choice because of the lower cost of adoption.

- Marketing departments may start with managed services, but as they begin to think of wide-scale deployments, an on-premise solution is far more likely to meet business objectives.

- CIOs will want to manage their digital signage network the way they manage their other networks, on their own. The benefit comes from sharing intelligence across applications already on existing networks, such as POS, DV and voice.
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The challenge is getting the same kind of quality connection to locations far from the data center as those close to it.

Users have to understand that content distribution doesn’t mean that providers are blasting the content out to all of the sites. We have the ability to control what is sent, where and when, and depending on the bandwidth available to certain access level sites, the distribution methods can be tailored to provide the content to these remote sites.

V. Miller Newton, CEO, Netkey

Content scheduling and management can be the biggest roadblock to a successful large-scale signage deployment. The mass and quantity of media-rich files needing to be delivered to hundreds or thousands of devices, possibly thousands of miles away, requires a robust technology infrastructure that is powerful, yet easy to use. Reliable delivery of large media files is a complex undertaking that requires understanding the unique issues found in media- and advertising-based networks.

Cindy Lai, Cayin Technology

Large scale challenges can boil down to four main points:

Financing: It usually involves a large amount of initial investment to install a network.

Resource management: Digital signage involves many partners, including a display provider, solution provider, content provider, installer, etc. It takes a great deal of mutual trust and effort to complete a large-scale deployment.

On-site services: Usually, for a large-scale digital signage network, the sites are widespread nationwide. There are several reasons that might cause the failure of a digital signage network, such as the hardware, network disconnection, on-site personnel with insufficient training, etc. Therefore, it takes a lot of effort to do the daily, on-site maintenance.

Keys for large-scale digital signage deployments

1. Technology must be flexible and scalable.
2. A provider must have experience with large-scale networking and digital signage infrastructures.
3. Solutions can’t be point-product solutions. Video must be able to be shown through different end points.
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Network bandwidth: You need to have a stable network connection and also enough bandwidth for updating or transmitting a large amount of multimedia content.

Andy Teoh, product manager, digital signage, DT Research

Bandwidth constraint is typically encountered when you move beyond a few hundred screens per deployment. This unknown stems from the fact that a signage display could be several thousand feet away from any physical network wiring or too far for a wireless network to reach. Some screens could potentially need to be deployed outdoors, and heating or cooling mechanisms would have to be thoroughly researched.

Kevin Goldsmith, head of global retail and media strategy for Remote Media

The common hurdles faced when scaling a digital signage network are:

1. IT/Networking: The company IT department can often be a barrier to entry. Applications like our signagelive have been designed to be IT friendly and minimize security issues while being considerate of bandwidth usage where restrictions apply.

2. Support/Maintenance: It is important that any hardware maintenance package can be supported throughout the entire estate, regardless of the span of the geographical location. A good digital signage solution will have integrated support monitoring that notifies the digital signage network administrator the moment a screen reports back that it has failed to check in or perhaps report that it has incorrect content.

3. Reporting: you must be able to confirm the playlist has been played and/or the number of times a specific piece of content has been played back in a given period (e.g., media sales impression logs)

4. Compliance: it’s vital to ensure content that should be played is being played and that content that should not be played has stopped.
Chapter 2: Knowing your content strategy

T
he No.1 challenge for large-scale users is the content creation process, according to Thomas Wyatt, general manager of Digital Media Systems for Cisco Systems. Most users are used to doing traditional print or Internet advertising. “There has to be a change in the business process to factor in and accommodate in-store media,” Wyatt said.

How much content is necessary?

One of the first questions that arises when considering content for a large-scale deployment is how much content to use — in this case, the length of the video, not the size.

“A common misconception is that you need a lot of content,” said Janice Litvinoff, senior manager of product management and technical marketing.
Chapter 2: Knowing your content strategy

for Cisco’s Digital Media Systems business unit. “No one is going to stand there for two hours and watch a movie on digital signs. It is important to know the average dwell time around each sign, based on where it’s located.”

Many users operate content seasonally, meaning the content is refreshed several times a year. This is particularly popular in the retail sector, where styles and store atmosphere can change with the season. Most users update no more than once a month.

“More content only means more space taken up on hard drives, another consideration when deploying many digital signs,” Litvinoff said.

Users should consider several factors when deciding on the size and frequency of their content:

What kind of content is appropriate? Users must think about the demographics and psychographics of their audience and determine how sophisticated the content must be in order to engage the audience. What is the desired reaction or action from your customer? In some cases, static Web content is more than sufficient, while in others, HD video with dynamic data occupying the same screen is required.

Where are the signs located, and how many are there? If the media players and screens are located in bandwidth-constrained areas, then it may take longer to send a large amount of content to multiple signs. Users must take the distribution time into consideration when scheduling content for playback.

How often does the content need to be updated or refreshed? The more often content is sent over the network, the greater the need for efficient and reliable distribution.

“People are experimenting with digital signage initially by using minimal content,” said Darshant Bhagat, product manager, systems integration, for Cisco. “Since dwell time isn’t more than a few seconds, there is no need to have hours of different content. It really depends on the user, the size of the content and the purpose of the content.”

“A common misconception is that you need a lot of content. No one is going to stand there for two hours and watch a movie on digital signs.”

— Janice Litvinoff, senior manager of product management/technical marketing for Cisco’s Digital Media Systems business unit.
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Consider the content needed for a large department store versus a single-brand retailer, Bhagat said. A retailer carrying a wide variety of products and services will have a wider breadth of content and will generally require more frequent updates, compared to a single-brand retail store that needs only seasonal updates.

Andy Teoh of DT Research said content decisions should first be based on who is going to be viewing the screens.

“Determining how much content to publish depends on the captive audience you are trying to reach,” he said. “For instance, for screens deployed in an airport baggage claim area, you would ideally want each advertising piece to playback in 15-second time slots. However, if you have screens being deployed at each departure gate area, the content could be longer because the captive audience in this case will be staring at the screen for a longer time period. Ideally, in conjunction with providing relevant television programming, the digital signage network should also be displaying relevant advertising and information, such as weather conditions for the destination cities and/or the latest hotel/dining promotions available throughout the metro area.”

Sometimes the content decision has to do with the amount of views and dwell time the screens are going to get. Consider the following scenario: Thomson, a U.K. travel agency, has a monthly footfall of one million people per month across their top 100 stores where the dwell time is 15 minutes. Kevin Goldsmith of Remote Media said that a good balance would be to have 22 eight-second slots, which will give a total playlist length of three minutes. This will give the consumer five opportunities to see the 22 ads.

“Deciding on how much content and how much time to allow for the playlist cycle is a careful balance that needs to be driven by dwell time and footfall,” Goldsmith said. “The shorter the dwell time, the shorter the playlist cycle and quantity of content within the playlist. Remember that for moving people you want static content — for example, a slideshow of JPGs or lightly animated Flash content, and for still people you want moving content.”

Hughes’ Simon Cockayne said the content should be based more on the environment in which the signage is deployed. He suggests researching customer satisfaction with the content mix when deciding on future evolution and improvement.
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Distribution based on geography

The location of the digital signs plays a large role in the content distribution. Consider how many stores need to receive content from headquarters and how widely dispersed they are.

“Wide area networks carry with them some challenges for digital signage,” Litvinoff said. “Some users may want to send out HD content to all of their stores, but some stores may only have T1 or 128k dial-up Internet connections in certain locations and can’t support the size of the content. It all depends on your local service provider and how much bandwidth costs and its availability. A retailer may have different considerations when distributing content to its chain of stores in Europe versus Asia, where bandwidth is cheaper and more available.”

Different types of content

Because of the many different forms of content, it makes a difference what you are sending over the network, be it video, Web pages or graphics. “You have to know what your content is going to be before you decide how to manage the connectivity,” Litvinoff said.

Also consider how you want the content presented. Is it going to be on demand or live streaming? Live content obviously is a bigger burden on the network because it requires a constant connection and near real-time delivery.

“Everyone wants to leverage video for digital signage,” said Bill Reilly of Cisco Systems. “But if not treated effectively, video can disturb other mission-critical applications working on the same network. People want video, but they also want to be on the phone and allow sales transactions at the same time. The trick is to make the apps work together on the network.”

Time allowance for content

Users also need to consider the time allowance it takes for content to be distributed to multiple locations on a network. If the content is updated seasonally, you have more time to send it. In a store-and-forward scenario, content is usually sent to the media player through the network at night or after business hours. This way it doesn’t disturb communications, POS or data transfers that may be occurring on the network during the day.

But special considerations should be taken for those users who need content on a constant, timely basis. Banks, for example, often want to send live financial information and real-time news. They don’t have a week’s lag time to send the
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information through the network because the news will be stale by then. There must be an open and constant network connection to their media players throughout the business day.
Case Study: Norsk Tipping goes large scale with its retail digital signage network

Business challenge
The national lottery in Norway, Norsk Tipping AS, is wholly owned by the government and administered by the Ministry of Culture. Proceeds support the country’s sports and culture programs. Of Norway’s 4.6 million citizens over the age of 18, 94 percent are registered to play, and 60 percent play weekly, purchasing lottery tickets and placing sports bets at any of the thousands of retail stores throughout the country. In 2005, revenues from the company’s 11 games totaled $1.4 billion, with profits of $424 million in US dollars. Norsk Tipping used to advertise its games through weekly mailings of promotional posters to retail outlets. But over the years, Norsk Tipping executives came to regard this approach as expensive, inflexible and unreliable.

“The problem was that we had no control over whether our retailers actually displayed the posters that we mailed,” said Stein Onsrud, technology adviser for Norsk Tipping. “Some stores left outdated marketing materials hanging in stores, which hurt sales.”

Norsk Tipping estimates that 60 percent of its promotional materials were never used, a statistic consistent with other retailers’ experiences. In addition, printing and postage for the posters cost $6.8 million to $8.5 million annually.

Norsk Tipping executives wanted a new way to deliver timely and targeted marketing communications to all stores with the goal of stimulating sales. To be effective, the new marketing solution would need to capture customer attention in crowded retail locations, avoid the high costs and mailing delays of print campaigns and not require on-site technical support at each retail location. The company wanted the same in-store solution to address two other business challenges as well. One was communicating the current odds of winning in real time, as required by Norwegian government regulations. The other was countering the growing competitive threat from online games by offering interactive, multiplayer games, such as bingo, virtual car racing and
virtual horse racing. These games require high-resolution (1080p) displays.

“We wanted a single platform that could meet all of our goals — personalized advertising, communicating odds and support for interactive games — to avoid the time and expense of deploying a new solution each time that a new communications need arose,” Onsrud said.

Solution criteria for Norsk Tipping included scalability, centralized management, use of IP standards for investment protection and high-resolution displays.

“PC-based solutions would not provide adequate return on investment because of the high costs of on-site technical support and maintenance for thousands of stores,” Onsrud said.

Network solution

The positive experiences of other companies with digital signage prompted Norsk Tipping to investigate digital signage solutions. “Other retailers have reported that live video on displays at the point of sale influences customers to make unplanned purchases,” Onsrud said.

Studies show that seven out of ten purchase decisions are made while the customer is in the store, almost one-third of shoppers who see an in-store display make purchases, and technology at the point of sale has been shown to increase sales between 15 to 60 percent.

Norsk Tipping chose the Cisco Digital Media System, a comprehensive solution for managing, publishing and playing digital media on networked digital signage displays.

“The Cisco solution met all of our requirements and distinguished itself with a very high MTBF [mean time before failure],” Onsrud said. “In addition, it distributes digital media over our existing Cisco IP network, which has the scalability and resiliency to support our thousands of retail locations.”

Norsk Tipping wanted to deploy the digital signage solution quickly, before retailers adopted their own solutions. This would give the company a competitive advantage in selling advertising on the signs to the retailers and other third parties. Therefore, Norsk Tipping engaged a Cisco partner to install and connect the digital signs in thousands of locations throughout the country.

Deployment was complete after just three months of work. The content-management system resides at headquarters. A system administrator manages the digital signage centrally, over the IP network, minimizing on-site technical support requirements.

Once the deployment was under way, Norsk Tipping began publishing content to the digital signs.

Each week, the company creates hourly broadcast plans that define the digital signage content to be broadcast over its
Case Study: Norsk Tipping goes large scale with its retail digital signage network

existing Cisco network. Typically, three or four messages alternate on each screen, providing more flexibility than possible with paper-based advertising. To better target its messages, Norsk Tipping divided its retailers into two segments, based on whether they focus on lottery games or sports betting. Stores in each segment receive content that is targeted for their customers. During quiet hours in sports-betting stores, for example, Norsk Tipping stimulates cross-selling by promoting lottery games.

“The Cisco Digital Media System helps us deliver the right communications, at the right time of day, to generate incremental sales,” said Onsrud. The displays are also used to broadcast odds of winning and weekly game results, eliminating the need for in-store TVs.

Business results

Instant communication of time-sensitive information, informing players about jackpot winnings and odds, is faster and less expensive with the Cisco Digital Media System.

“It is not possible to disseminate jackpot information quickly enough using print channels because of production and mailing lead times,” said Reidar Rorby Jr., managing director of Norsk Tipping. “With the Cisco Digital Media System, we can immediately broadcast jackpot information to all retailers in the country at the same time.”

Higher sales

The Cisco Digital Media System is helping Norsk Tipping increase purchases by players who previously played only a few times each year.

“Our retailers are reporting increased sales since we installed the digital signage,” Onsrud said. “The reason is that we are broadcasting more targeted, more eye-catching campaign material than when we were using paper-based marketing campaigns.”

Sales have increased most for the games that traditionally appeal to occasional players, such as the Lotto lottery game.

The Cisco Digital Media System is a cost-effective channel for marketing compelling content and advertising. The cost-per-thousand viewers is $55.1 million for the Cisco Digital Media System, compared to $100.9 million for television and $193.6 million for print advertising in the nation’s four largest newspapers.

“Advertising is shifting from traditional media channels such as television and newspaper to retailers’ own digital channels because of the strong cost advantages,” Onsrud said.
Investment payback
According to Norsk Tipping's investment analysis, higher sales for even just three of the company’s 11 games will completely pay for the investment in five years or less. This analysis assumes that marketing campaigns displayed on digital signage at the point of sale will result in occasional players playing games four more times a year, which translates to a sales increase of six percent.

“That is an extremely conservative analysis,” said Onsrud. “We actually expect a much more rapid payback because of increased sales of the other eight games, the elimination of printing and mailing costs for posters and lower advertising costs compared to other media.”

Next steps
Norsk Tipping plans to further segment its retail outlets to use the Cisco Digital Media System for even more precisely targeted marketing campaigns at the point of sale. For example, the company may vary marketing campaigns based on store customers’ average age — information collected from the lottery membership cards that customers use to make their purchases.

With its high-resolution digital signage, Norsk Tipping is now prepared to offer new products, such as IPTV broadcasts of sports events intended to increase sports betting.

“IPTV is less expensive, easier and more manageable than maintaining TVs that are tuned to a satellite channel,” Onsrud said. “We will not need any other equipment in retail stores in addition to the digital signage that is already there.”

The high-resolution (1080p) displays can also support multiplayer interactive games, such as virtual car racing. Norsk Tipping has the option to sell advertising on the new in-store channel to other parties, including the retail chains themselves. Conservative estimates for incremental advertising revenue are in the tens of millions of dollars annually.

“With its flexibility and scalability, the Cisco Digital Media System is helping us strengthen our brand, increase sales, make it more attractive for retailers to sell our products, earn incremental advertising revenue and maintain customer confidence,” Onsrud said.

Products used:
Routing and Switching
● Catalyst 6500 with Content Switching Module (CSM)

Video
● Cisco Digital Media System: Digital Media Manager
● Cisco Digital Media Players
What do you need from your network?

Many enterprise-level companies that are planning large-scale digital signage installations already have a network that is used for internal communications and the Internet as well as data transfer. But that network must be examined before commencing a large-scale rollout of digital signage to ensure that it can handle the needs of video.

“For example, consider a company that wants to deploy 4,000 screens,” Cisco Systems’ Thomas Wyatt said. “If they want to use HD live streaming video, they will need to consider how to structure the network without affecting other mission-critical applications.”

Is the network capable of doing HD streaming to all 4,000 players? Wyatt said that for most organizations, the answer right now is no. Most will use media players and use a store-and-forward technique, where content is sent during off-hours and stored until use.

“For retailers, this is fine at the moment,” Wyatt said. “Most don’t
stream content or change their content very often, even though they’d like to.”

Darshant Bhagat, also of Cisco Systems, said the No. 1 priority of the network supporting digital signage is efficiency in distributing the content across different locations. He offers the following tips to help IT assess the capabilities of an existing network and make necessary design decisions:

1. Know the size of your content: A high-definition video can be several gigabytes in file size, whereas a Web page can be very small.

2. Know the current service level: How long will it take you to distribute content on any given day to any given sign, considering the size of your content? Is this good enough?

3. Consider a content distribution network (CDN) design for advanced uses.

Scaling the network

Also, consider the network’s ability to be scaled to a larger size. The network needs to be flexible enough to handle an increase in bandwidth usage as you send video data over it, particularly if it is HD.

“When you have to grow your screens tenfold, ask yourself if the digital signage server will be able to handle the increasing load,” said Andy Teoh of DT Research. “Also, Web browser-based device and content management are important for large-scale deployments. The ability to monitor each display remotely and track each device’s performance are key factors to ensuring optimal uptime and making sure that content or application issues can be resolved quickly. In the near future perhaps you will have a need to display multiple HD movie content simultaneously,” Teoh said. “Does the digital signage hardware have a modular design so that you can replace the signage appliance while preserving your screen investment?”

Teoh also said that the network’s reliability must be on par with traditional broadcast systems. Downtime equals lost revenue. Systems must have built-in failure reporting capabilities and be linked to a network operations center for remote repairs and diagnostics.
Chapter 3: Assessing your network

Cost sharing: leveraging the signage network for other purposes

Different applications leverage the capabilities of the network to benefit others. But digital signage providers are finding more ways in which digital signage, and the network that supports it, can bring added value to the business model.

“Increasingly, we see a lot of deployments incorporating some kind of digital signage network in a kiosk environment,” Teoh said. “This makes perfect sense because the kiosk serves the purpose of self-service for customers, and when the kiosk is not being utilized, that screen can be used to display advertising to customers passing by. This is extremely useful if you have large screen kiosk systems [37-inch or above] that are visible to your captive audience in high-traffic areas.”

Digital signage networks can also be used for training purposes and disseminating company information to employees. Dave Haar explained that Minicom is one of the many digital signage providers that enables digital signage for corporate communications purposes. Depending on the environment, networks can be used for entertainment purposes or emergency messaging systems when not being used for their primary

Questions to ask about scaling your network

- **What do you want to get out of the network?** (i.e., brand reinforcement, promotional activities, increasing sales over competitive brands, customer training, product demonstrations, third-party advertising, etc.)

- **How many screens are going to be lit up?**

- **What type of content will be running? Is it HD?**

- **How many megabits of video traffic are needed to get to the screens?**

- **What is your existing network infrastructure?**

- **How does the location of your end points affect the network?**

- **How will you light up the screens, based on the existing conditions?**

- **Will the content stream over the network, or will it be sent directly to a device that will play it on site?**

- **How will you measure its success?**
Chapter 3: Assessing your network

purpose — again varying with the environment.

Harrod’s, one of London’s largest and best-known department stores, uses its network of 225 in-store screens to provide staff training prior to the store opening each morning.

U.K. travel agent Thomas Cook uses a network set up by Remote Media that automatically taps into a holiday database of dynamic content and automatically integrates display offers on its screens, which educates both the customers and the employees on the current travel specials for that time of year. The process is similar for a retailer that wants to link into its inventory management system to promote items that recently arrived or need to move.
The role of the network

For a large-scale digital signage deployment, a network is not only beneficial but also usually necessary. The network allows one person to control all the screens from a central location and schedule content delivery and downloads to remote locations. Having a dependable and reliable network that will work 24/7 without needing someone to frequently fine-tune it is crucial for the long-term prospect of the network, not to mention the comfort level of the advertising clientele.

“The network improves ROI of a digital signage deployment by many fold. Typically, users don’t have time to change all the content at each screen manually. That would be like having to send a DVD of content to 500 locations. The network also allows users to instantly and remotely manage individual pieces of signage content, without having to change the entire playlist.”

— Darshant Bhagat, product manager, systems integration, Cisco Systems

Reliable connectivity with broadband capability allows for rapid content delivery and improved overall performance,” said V. Miller Newton, CEO of Netkey. “The central management server needs to be scalable and able to support the load placed on the database for content scheduling and delivery and reporting. Security of the system is paramount — considerable damage to your brand can be wrought by a hacker gaining access to the signage network and then deploying inappropriate content or stopping operation of the network entirely.”

A digital signage network also serves audiences. Without the network, POS and inventory system integration could not be easily or effectively accomplished. Once it is accomplished, the ROI of the signage network multiplies exponentially.
as the watchdog for the deployment. By having access to all screens, users can employ remote management software to monitor the activity of any screen on the network from one central computer. This software also sends real-time maintenance messages through the network to alert users should a screen go down.

“Using the network to monitor the status of the screens ensures high uptime and collects playout audit data,” said Simon Cockayne of Hughes U.K.

Network considerations

It sounds easy, right? Just get a network for your screens, and all your problems will be solved. But anyone who has been online knows that the Internet and the networks that run on it have limitations.

With digital signage networks, perhaps the biggest limitation to successful operation is not knowing how to manage your content given your bandwidth constraints. When you consider installing a network or modifying your existing network, you must first consider that the content running on it will be high-quality or high-definition video. Unless you already conduct video conferencing or the like, you may be surprised at how much bandwidth video takes up on the network compared to your existing applications.

As a solution, Andy Teoh of DT Research explains two models for sending video-over-IP for large-scale deployments, “There are two different DS network models that exist today.” Teoh said. “One is the video broadcast model where you have a central server being used to stream video content to signage appliances throughout the digital signage network. In this model, the major limitation lies in the central server being the most critical component of the whole network. Failure of the server or the network would imply a catastrophic failure of the whole digital signage system. In the store-and-forward model, the server still operates as a critical, core component of the digital signage network followed by the network, but since content can be scheduled in advance, perhaps a month away, in the event of a network failure — even without a failover network system — the digital signage network/system would still be operational.”

From an engineering standpoint, Bhagat suggests that users segregate bandwidth so different applications and video traffic don’t affect each other. He said some of the easiest solutions to the bandwidth issue are content pre-positioning and store-and-forward caching methods. These methods are employed at remote locations for delivery of HD video applications and scaling requirements in terms of the number of digital signs, as
these demand a high bandwidth from the underlying WAN network.

Bhagat deals with the Cisco ACNS solution, a comprehensive content-distribution solution for remote-site caching of content for digital signage networks. Products like these can download and store content sent after store hours and then serve it to the media players during the day, so daytime functions on the WAN aren’t interrupted.

“Networks always play a role in digital signage deployments, whether large or small,” Minicom’s Dave Haar said. “Data needs to be sent from one location to another in a timely and secure fashion. Once data reaches its destination, it needs to be disseminated to screens. The most effective way to do that is to have content sent to a central computer, then delivered to media players, which play the content on the screens.”

Approaching IT: a playbook

If the network is the foundation of the digital signage system, IT is the group that pours the concrete…and it’s also the handyman. The fact is, the IT group of a large-scale user has the most contact with the network itself and therefore is responsible for the core operation of the entire system.

Since IT is one of the key stakeholders in a large-scale digital signage deployment, other departments need to understand their position in the company and come prepared with information for effective communication. An open, trusting and respectful relationship between IT and these other departments will minimize conflicts when deploying digital signage.

Expert advice: working effectively with the IT department

V. Miller Newton, CEO, Netkey

Information-technology professionals at the corporate level are in a difficult position. They are required to support business initiatives and use technology to deliver corporate goals, yet they are limited by smaller budgets and fewer staff resources. IT needs to be involved from the start with a digital signage deployment of any size and especially one that requires significant technology resources for large-scale deployments.
Chapter 4: Distributing content over the network

It’s important that the digital signage technology used meets the stringent requirements of corporate IT. Too many digital signage products, especially software, are designed with business users, designers or marketing in mind, and cannot pass muster after a sophisticated IT review. Netkey has learned from experience — supporting large deployments in top-tier retailers — banks and other business, what is required to deliver software that works reliably, securely and effectively in a corporate IT data center or as part of an outsourced ASP or SaaS infrastructure.

Janice Litvinoff, senior manager of product management for Cisco’s Digital Media Systems business unit

Generally, IT is more concerned with CRM and POS data than running video. Video is used for advertising and marketing, not mission-critical applications that directly impact the bottom line. Video is something IT hesitates to take on unless and until it is thoroughly thought through.

IT members will worry “Do I have the heads to support this network?” A lot of times, a company’s IT department is “client-funded,” meaning that expansion of the IT department and technical equipment is mostly limited by the budget of the business functions IT supports. The last thing IT wants is to hire more people to monitor, troubleshoot, patch and provide break/fix support for digital signage devices.

Simon Cockayne, Hughes U.K.

It depends on the organization. Some IT departments will want a very hands-on role and integrate digital signage right into the network. However, some will prefer the network to be separate from the core IT infrastructure and networks for security and mission-critical application performance reasons.

Keywords for communication: What resonates with IT?

A/V distribution system: The technology used to carry the video and audio signal from the digital signage
player to the display device.

**Bandwidth:** The amount of data that can be sent through a network connection. For a digital signage network connection, bandwidth is usually measured in bits per second (kilobits — Kbps; megabits — Mbps; and gigabits — Gbps).

**Bitrate:** A measurement of bandwidth requirements for delivery of a particular file, usually shown as the number of bits transmitted per second (kilobits — Kbps; megabits — Mbps; and gigabits — Gbps).

**Content:** The full-motion video, audio, promotions, messaging and information you wish to deliver. It may include pre-recorded information, news feeds or pricing and merchandising information delivered from the POS system.

**Content distribution server:** The computers where content is stored, managed and distributed to players via a network.

**Digital signage management software:** Specialized software used to schedule the delivery and playback of content at multiple devices, as well as to monitor performance and track and report on the execution of the scheduled events. More advanced content-management software packages also include authoring features, and most include screen formatting and production capability for screen crawlers and other information feeds.

**Digital signage:** The creation, management, scheduling, distribution and display of electronic media on large displays in public areas with information of particular interest to a selected audience.

**Display devices:** The actual hardware displays on which the content is shown. These include plasma and LCD displays, projection onto a screen or holographic device, interactive kiosks or CRT devices, and any number of emerging display technologies (OLED, electronic ink, PLED, etc.).

**Distribution network:** This system provides the delivery and feedback infrastructure to pass information to and from the display locations. The network can take multiple forms: satellite, Internet, LAN, WAN or wireless.

**Local storage capacity:** The amount of space that a device at the location of the screen has available to hold digital content.

**Media player:** Typically, PCs or special-purpose media devices used to store and deliver content to the display devices on the defined timetable.

**Multichannel player:** A player capable of streaming more than one channel of unique content at a time.

**On demand:** Content that is archived or stored on devices so users can have open access instead of waiting for content to be broadcast.
**Chapter 4: Distributing content over the network**

**Playlist:** A list of clips and their play order by time or other heuristics.

**Playlog:** A record of information created from the digital signage system reflecting the content played, the system performance, and other data.

**Real time:** Live actions over a digital connection. For example, real time can refer to a live broadcast or an active exchange between a host and user.

**Questions to expect from IT**

**What IT will ask:**

- How many hours of content can be stored locally on each sign?
- How much time is needed for content to propagate? How often does content need to change?
- What kind of access restrictions are needed for the content administrators?
- How many users will have access to the signage network?
- What kind of security do we need in place for wireless systems? (Hardwired networks don't need as much security)
- How many IT hours is it going to take to install and support the network?
- How many IT resources are required to maintain this network?
  1. Will new servers need to be added?
  2. What else needs to integrate with digital signage?

**Understanding IT pressures**

“One of the biggest pressures for IT is maintaining the hardware associated with digital signage, particularly media players,” Cisco’s Janice Litvinoff said. “If they’re PCs, do they need to be constantly updated with Windows patches and updates? What is the life span of the hardware? Who will maintain the equipment and repair moving parts, etc.? Who is in close proximity that can fix it?”

**Capabilities of the IT department**

The IT department is bound by the constraints of the network. But expectations from executives are usually very high. For example, executives may request that HD video be run to all locations and screens. They often don’t understand the strain that video, especially HD, can put on an undersized network.

“HD live video can't go out to 1,000 stores if there are only DSL
Chapter 4: Distributing content over the network

connections going to those stores, especially if part of that bandwidth is being used for POS and back-end information,” Litvinoff said.

Understanding bandwidth and similar IT pressures will help strengthen the communication and overall relationship between IT and other departments.
Coordinating all departments

When making the decision to leverage IP-based video on your network, you need to consider that just about everyone in the company is using the network infrastructure. Some run their communications, both internal and external, off this network. Others may also use the network to relay important point-of-sale information from POS systems to analytic computers. Any organization planning a digital signage deployment involving video needs to take into consideration all of the groups involved.

“One misconception when using video over IP is thinking that all video is the same,” Cisco’s Bill Reilly said. “But that is not true. There is desktop video, video conferencing, digital signage, etc. Each video medium has its own set of unique requirements. To have a ubiquitous video vision throughout the whole company is a significant challenge.”

Regardless of the type of video being used, it all must run on the company’s IP network. For that reason, Reilly emphasized that close work with the IT department is crucial.
“Have conversations with all involved teams to determine the needs of the different departments of the company,” Reilly said. “Everyone needs to be kept in the loop and know results of the project as they happen.”

Discussing the technology requirements needed for a digital signage project is not just an IT discussion. The end user—be it the marketing team—executive board or even store managers, must be involved. Marketing in particular needs to be represented and involved to decide the messaging and brand awareness associated with the high-quality video.

A former IP professional himself, Reilly said that in return the IT department may need to simplify the conversation about network requirements so everyone understands what is going on and everyone will be on the same page.

“It is essential to have representation from the various departmental functions impacted by the project, both from a development and operational standpoint,” Miller said. “These include the line-of-business executive sponsors, the project sponsors, the project managers, the functional leads, IT, and in retail, store operations. The goal is to get all team members on the same page at the beginning of the project and have a clear set of roles and responsibilities. Communication is most important — establish an effective communication plan throughout all phases of the project.”

A successful deployment requires teamwork, but it also requires good leadership. Andy Teoh of DT Research suggests having a designated leader for the rollout.

“I think it’s definitely important to have a dedicated project manager/leader whose sole responsibility is to get all parties involved in a company to coordinate the digital signage deployment,” Teoh said. “From the IT department that handles network deployment and server setup expertise, to upper management that gives support for the project, to marketing that coordinates with content providers, to HR that makes sure that messages conform to company policy, someone needs to be in charge.”

“Gridlock happens when there are too many chiefs,” Reilly said. “The teams
are not seeing the shared vision. It creates a tug of war as to who does what. In the end, the initial goal is lost, and applications can end up being shelved.”

**Identifying the stakeholders**

Any digital signage provider will tell you that a digital signage deployment of any size is not a one-person job. Implementing screens into any environment and business model requires the combined work of several key parties. When planning for a screen or network deployment, you must make sure that the important stakeholders are identified from the beginning.

At the start, the primary stakeholder in the company is generally the marketing department. It usually presents the idea of using digital signage, researches the effectiveness of the medium and decides the marketing or advertising budget that will be necessary to support the systems. Marketing usually drives the digital signage requirements, but CEOs have also been known to drive the interest in digital signage networks.

“CEOs will talk to other CEOs or come back from conferences with new ideas for driving business transformation and creating new customer experiences,” Cisco’s Thomas Wyatt said.

Marketing will also identify features of the network that it wants included, such as RSS news feeds, interactivity or live TV. These ideas are usually presented to IT, another significant stakeholder. Marketing brings the desired features to the table, and then asks IT to determine if those features will work in the existing or planned network.

“Marketing will come up with the creative ideas and budget,” Wyatt said. “IT is responsible for figuring out how to put a solution in place that will support these ideas and scale as the company grows.”

Wyatt warns users in advance of some of the expectations involved with this multidepartmental involvement. Experience shows that marketing usually wants the solution installed and running quickly, and wants one that offers a lot of features. Marketing often doesn’t account for the impact of running video on the existing network and how it might affect other mission-critical applications on the same network.

IT is more familiar with the existing network and the impact that digital signage/video may have on it. As a result, IT becomes a key stakeholder because of its familiarity with the network infrastructure. In some situations, the company LAN or network may require an upgrade to accommodate digital signage. Wyatt said he is seeing this with some retailers but not as much with banks, which usually already
have an advanced, secure, existing infrastructure in place.

In addition, IT needs to prioritize digital signage against other projects. As demands on IT departments continue to increase, being able to prove the ROI on digital signage projects will be critical to a successful scalable deployment.

The secret to success is a strong partnership between the marketing and IT departments. Users should avoid situations that may pit the two groups against each other.
Chapter 6: Avoiding common pitfalls

When you are deploying a large-scale network, you may initially be overwhelmed, and understandably so. Mistakes can be more costly as the scale of the network grows. Fortunately for new users, experienced signage vendors are willing to talk about the common pitfalls involved in going digital on a large scale. Here we’ll walk through some of the common challenges involved with digital signage and its networks, as well as provide some expert advice on avoiding those traps.

Working with the IT department

One of the common pitfalls is not involving IT at the right time. “Bring them into the project management phase as early as possible — ideally, within the project conception phase,” Andy Teoh said.

According to Teoh, IT can enhance the planning of a large-scale digital signage deployment from the beginning. Here’s how:

Network planning: IT already knows the network and its capabilities and can make sure that enough bandwidth has been allocated for each end point.

Server hardware requirements: IT knows the hardware involved with digital signage and can therefore assist in making educated purchasing decisions.

Security: IT has experience securing the existing network on a local level, ensuring that even wireless connections are well protected. For example, if the end point involves putting in a kiosk that handles customer financial transactions, IT can thoroughly research PCI compliance if credit card information needs to be transmitted through the network.

Server management: Once the signage network has been deployed, the IT department will most likely be responsible
Chapter 6: Avoiding common pitfalls

for handling the day-to-day support of the digital signage system.

Content pitfalls

In the digital signage industry, content is king. What is on the screen is more important than any other aspect of the deployment. Content is what draws viewers’ eyes to the screen, but it can also be what makes them turn away.

“The content deployed needs to be relevant and engaging for the captive audience you are trying to reach,” Teoh said. “Nothing is worse than having content displayed over a few hundred screens at a time without anyone verifying how it will look. Also, nothing comes close to having full support from executive-level management. ROI can and will eventually be recouped, but management needs to understand that some short-term investments can be costly.”

In other words, if you’re going to skimp on part of the deployment, make sure it is not the content. Content requires a significant investment of money and time for planning.

“Don’t underestimate the ongoing content production costs, and maintain an ongoing commitment to learning how to improve the content for customers,” Simon Cockayne said. “Marketing should lead a project of this type rather than IT.”

Overwhelming features, time crunches and pilot projects

Digital signage offers many features in addition to just displaying content on a screen. Users can choose to run HD video, measure their audience through facial recognition tools and allow users to control content with their cell phones, just to mention a few. With all of these options, it is easy for marketing and other planning departments to become excited about the features and deviate from the overall objectives. IT can help offer a more realistic perspective.

“We’re finding that a lot of users tend to overemphasize the importance of the advanced features and don’t spend enough time with the blocking and tackling of the core functionalities of the system. Many only use a fraction of the features that come with any given digital signage system.”

— Thomas Wyatt, general manager of Digital Media Systems, Cisco Systems

“We’re finding that a lot of users tend to overemphasize the importance of the advanced features and don’t spend enough time with the blocking and tackling of the core functionalities of the system,” Wyatt said. “Many only use a fraction of the features that come with any given digital signage system.”
Also, a lot of times purchasing decisions are based on ‘nice to have’ features, but the right emphasis is not put into the technology features required to have a scalable and reliable solution. Don’t jeopardize scalability and reliability for whiz-bang features.”

Wyatt also recommends that the involved planning groups make sure that they are comfortable with and knowledgeable about the core features of the digital signage network, and that they know the functionality they are dealing with. Some clients realize down the road that although a system may offer many cool features, it does not support the main functionality they were originally looking for.

Project planners have also run into time crunches when deploying large-scale networks because of poor time management.

“Failing to set realistic timescales for implementation is one of the biggest pitfalls of a digital signage deployment,” Goldsmith said.

Marketing, IT and other departments will often feel pressure to have networks up and running quickly. The reality is that it takes detailed planning to make sure networks run effectively. Planning will also reduce maintenance costs over time.

“Maintenance costs are always much higher than hardware or software costs, and users tend to choose cheaper solutions when deploying large-scale digital signage networks,” Chang said. “Imagine if a thousand players encountered the same problem and how much manpower and money it would take to fix the problem. This could cause the project to totally fail.”

Johnson suggests using a pilot program to test the signage network, particularly if you are going to be scaling up the network in the future. Pilot programs can help you evaluate deployment and maintenance costs, as well as how the network and content resonate with customers.

He also said that pilot programs can reveal problems with hardware and software that could result in problems down the road. “Incorrect software for your application might be ultimately unscalable. Also, you may crack into a ‘magic box’ and find an inferior PC in what you thought was the heart of your system.”

Chapter 6: Avoiding common pitfalls
Conclusion

Taking your digital signage deployment to multiple locations can be challenging, but the rewards are worth it. As a business person considering adding a digital network to your business model, you need first of all to know what a network is capable of doing and find a way to make it work for you.

In addition to running ads or promotional messages on digital signage, digital networks can support video content that can be used for corporate communications and employee training, enterprise TV channels and interactive wayfinding, just to name a few uses.

With this in mind, it is important to have a sound content strategy so you can gauge the scaling of the network. Are you going to be using video or Flash animation? Is the video HD? What overall message do you want to convey to your customers? The type of content and when it is sent will have an effect on the network.

Finally, behind every successful network deployment is a team of marketing, executive and IT personnel who have worked together to plan the signage and the network. Each department in the company may have a separate agenda and purpose for the network, but getting it off the ground requires compromise and teamwork on an internal level.

Digital signage is the future of advertising and customer communication. If done right, users can reap the rewards — in the form of ROI — for years to come.
Four tips for digital platforms

This article originally appeared on Digital Signage Today in April 2008.

By Jeff Collard, president, Omnivex

Jeff Collard is the president of Omnivex, makers of enterprise-wide software for digital signage networks.

The age of dynamic digital signage is upon us. You won’t travel very far without seeing an advertisement in a grocery store, a menu in a restaurant or a wayfinding display in a hotel — all running on large-screen monitors.

Market intelligence firm iSuppli predicts global sales of digital signage will reach $14.6 billion annually by 2011. Companies see the possibilities for increased revenues, reduced costs and healthier customer and employee relationships. But the actual displays are only a small part of the equation. A digital signage system won’t transform your business without a sound strategy and the right technology behind it.

Here are four principles to consider before deploying a digital signage platform.

1. Context is king

There’s an erroneous assumption that if something is playing on a digital sign, people will watch it. But think again. If the content isn’t relevant or interesting to the viewer, why would they?

Effectively engaging audiences to inform, motivate or persuade is not just about creative content, it’s also about timing, environment and relevance. In a word: context. When businesses target messages to individual viewers based on who they are, where they are, what they are doing and what that location has to offer, then they can fulfill the needs of both internal and external customers.

The message you deliver to a young single man looking for a car may be quite different from the one you provide to a working mom with kids, at the same location or to that same man at different times of the day. Many companies talk about this capability but are limited to specific responses or simple playlist manipulation.

But adapting the content is not pie in the sky. It’s actually happening now. Take, for example, Vancouver International Airport’s display network. Wayfinding and other information on its digital displays change languages based on the origination of a flight. If the plane lands from Mexico City, then the board at that gate renders information in Spanish, in addition to French and English.

The Hyatt Regency Chicago deploys the same system in a manner that is much more consumer specific.
Content can change on digital displays around the hotel based on individual customer characteristics that are encoded on an RFID chip in a conference badge or card key that moves with them, directing them to the appropriate venue. With the advent of face recognition and other sensory technologies, you are able to get more information that can be used to determine appropriate content within a presentation.

2. Real-time information drives results

Context is derived from a set of circumstances related to a particular event or situation. The more focused the message or the more recent the event, the greater the impact.

Real-time information connects a call to action to an opportunity and a result. For many businesses, that is a significant competitive advantage. In retail, inventory turns are an important measure of profitability. If your digital signage system can match customers with the appropriate products that are currently available to purchase, both the consumer and the store benefit. If you promote an item that is not currently in stock, you undermine the credibility of your organization and aggravate a customer.

Price changes may be implemented at different locations and at different times, based on stock levels or the number of patrons in the store at a given time. As stock of an old model depletes, promotions at each store may vary as their local inventory is sold. Price changes may be timed to minimize the number of customers who might have an item in their cart when the price change is implemented to avoid inconveniencing those customers.

Live data can be pushed to each screen the instant something changes to drive an event or inform the viewer. Simple polling for information that is eventually downloaded and read into your content doesn't trigger events; it lags behind them.

Companies today are awash with information and are looking for ways to make it actionable. By connecting your data directly to your visual communications network, you make these precious assets work for you and not against you. Insist that your digital signage system relies on live data. A strong data foundation is a strategic advantage that will pay huge dividends while making your messaging dynamic and meaningful to your audience.

3. Expectations rise with HDTV, video games

The world is moving to high-definition content. Television will be entirely digital when analog signals end in February 2009. Just as the introduction of color television quickly ended...
the production of black and white content, 3D vectored graphics will become the new video standard, and flat, low-resolution content will die off. Consumers will come to expect rich media consistent with the quality they can receive at home. Products and messages are an extension of the media, and weak content will be associated with weak products.

Vectored graphics automatically scale to fit any screen without the pixilation that today’s images suffer, so your message will look good on every screen in your world regardless of resolution. High-definition 3D graphics will bring images to life, making messages more compelling and actionable.

People today have access to much greater diversity and choice. In a customer-centric world, supply chains revolve around individual customer needs. Progressive companies are looking for better ways to communicate their messages and engage their audiences. They are investing in technologies that not only ensure that their messages will have a receptive audience but also deliver value to their customers. Great graphics are needed to capture their attention, and relevant graphics will deliver results.

4. Pay attention to your network

An effective digital signage system should drive costs down and efficiencies up. Too many people focus on content delivery and proof of play, ignoring what it costs them to deliver those messages or ensuring that the system is actually running. Your content might be playing on the PC or media player, but if the screen is turned off or input is changed, no one will receive your message, and your proof-of-play logs will be misleading.

A properly configured system not only tells you that your message played but also that the display was on and properly configured to the right input. It should also monitor the hardware and automatically take corrective action when necessary. These displays are expensive assets, and when they are not working properly, they are costing you money.

Bandwidth is expensive, and although the infrastructure is growing, so are the requirements from other applications. Efficient transmission is becoming a major factor in the operating cost of digital signage networks.

Digital signage software should ensure that your assets are delivered in the most efficient manner. If a change is required, then only the information pertinent to the change should go to the display. Recreating and redistributing a large video or Flash file because one small piece of information changed is an unacceptable and unnecessary expense. The change should happen automatically, without
Appendix

any content recreation.

Different people need access to different information about your network. A marketing person should be able to dynamically drill down and look at a video asset in real-time in the same way that the system operator can drill down to look at a hardware asset. The experience should be the same in both cases. Good network tools allow different people to do their jobs independent of each other, in a way that protects the security and integrity of your business. You don’t want to create information logjams that prevent people from gaining access to the information they need.

As you roll out your digital signage system, keep in mind that technology supporting a well-thought-out business strategy will deliver the critical building blocks for growing revenues, reducing costs and endearing you to customers for years to come.
Digital signage as middle media platform

This article originally appeared on Digital Signage Today in April 2008.

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Social networking. Bluetooth. Mobile commerce. Millennials visiting Web sites and extending music and TV. Each of these are components in the next wave of the digital signage business model. Digital signage has enjoyed rapid growth based on a TV-like ad display model, but the technology that drives the advantages of digital displays has positioned it for a new level of interaction and service to marketers.

Digital signage has been an extension of the TV and Internet ad-delivery models by moving ad presentation to out-of-home and point-of-purchase. Digital signage is showing up in locations where people gather to work, learn, shop, play, commute and wait. It is also gaining the attention of marketers because it better targets specific demographics, costs less than a typical TV ad and provides a better compliance report.

The number of displays is growing and delivering a viable number of exposures to merit the efforts of ad placement. Ad agencies that have lived with the “TV ad needle” pushed in their arms for years are realizing that media-buying profits are based on the broken business model of broadcast. They see that their success will be regained by returning to producing messages that communicate with defined target demographics.

This shift includes two significant changes — better message targeting and viewer message interface.

Message targeting that has been based on good media buying will increasingly be based on dynamic ad provisioning. The cookies used for Internet targeting, the “clicker” history of cable and cognitive recognition in digital signage all have the same objectives, and each is based on technology supporting target marketing. Message targeting is becoming a back-office technology where ads are pulled from storage and displayed based on pre-set “if–then” display rules.

Message interface is the new domain of digital signage defined by interaction with the content. While physical interaction has developed through kiosks and touchscreens, the ability to scale is limited. By extending display messaging to a personal device such as a cell phone, message engagement and brand interaction is significantly advanced. This advancement makes
digital signage valuable for marketers and communicators wishing to extend ad display into brand engagement.

Aiming for ubiquity

Marketers know the inherent value in using digital signage to gain heightened exposure. Their goal is ubiquity — that at each turn the media is fulfilling customers' needs, wants and aspirations.

SeeSaw Networks has offered a good example of this ubiquity for college students. In some situations students encounter SeeSaw digital signage on public transportation, at the coffee shop, campus locations, gas station, bank, c-store, nightclub and restaurant. The company has managed to incorporate digital signage into each daily destination.

Each activity is highly social, so the ads have a high probability of impacting brand awareness for students. Digital signage is part of their social networking, which includes planned activities, destinations and discussions.

The Millennial group (those born after 1982) are an attractive demographic for brands. This generation is the first to exceed 100 million people in North America, with 42.6 million of those between the ages of 17-26.

According to StatisticsU research, 17- to 26-year-olds in this demographic spend $160.8 billion annually, not including housing payments, utilities and school costs. Ninety-six percent of college students and 86 percent of non-students in this age group use cell phones. Daniel Coates, co-founder of SurveyU, said that this group’s media consumption is shifting dramatically.

IDC Jupiter Research valued U.S. mobile “digital commerce” at $11.2 billion for 2007, including downloads and mobile commerce. According to Telephia, the mobile research division of Nielsen, 31 million people used mobile Internet in June 2007. Comsource forecasts mobile Internet to increase to 92 million people by 2012.

Through interactivity, digital signage serves as an excellent media platform to reach Millennials and other demographics through text code (SMS) downloads, direction to Web sites, BlueCasting and permission marketing.

SMS Text. Text codes presented in a digital ad could prompt the download of information, coupons or media such as ringtones, wallpaper or games. A text code could also enable a mobile commerce transaction. Mobile commerce provider mPoria indicates that the average mobile commerce transaction is $130, with conversion rates of .8-1.5 percent on mobile devices.

Bluetooth. Beyond text codes, the digital signage media platform can
serve as the interactive media supply point for near-field communications using Bluetooth. According to a February 2008 report by NPD Group, 69 percent of phones sold in Q2 2007 were Bluetooth-enabled, a 48 percent increase over Q3 2006. Over 40 percent of users with Bluetooth use the capability.

RFID technology has had limited deployment, but like barcode readers or other near-field communications, it offers a viable trigger for content display customized to the viewer experience.

Facial recognition. Digital signage is ideally suited to serve ads and other content based on the audience profile of its viewers. Cognitive facial recognition can determine the gender, age range and ethnicity of a viewer. This information can then be used to trigger the display of content suited to the viewer. Using this approach, one ad may be displayed for a 50-year-old white male while a different ad is presented for a 20-year-old Asian female.

New opportunities

As digital signage moves from playloop ad display to a media platform approach, a new model of ad placement and payment is made possible. Increased ad revenues are realized when audience recognition reports on actual ad viewers and ads are displayed especially for targeted audiences. Revenue is also generated by SMS text or mobile commerce interactions triggered by the digital signage content.

Dynamic ad provisioning from facial recognition suggests an entirely new revenue model from better message targeting. In this revenue model, content is developed for locations where targeted viewers are expected. The content is placed in storage on the media player at that location for playout when triggered (rather than simply placing the ad into a playloop).

The invoice for the ads is validated by a report of the viewers. CognoVision and TruMedia both offer audience recognition products for this model. This same report could fuel the creative development of the ad to maximize viewer awareness and engagement.

The challenge of reaching consumers and viewers has motivated the development of new technologies and business models. As digital signage continues to evolve, its strengths are exploited and interrelationships are refined, all to the benefit of savvy communicators.