SKYKIT®

Digital Signage Guide

10 Digital Signage Topics You Need to Know Before Buying

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Cloud-Based Digital Signage

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Cloud-Based Digital Signage

We all know that the cloud is tremendously valuable in our everyday lives.

Most of us have smartphones that automatically back up our photos in a cloud, and many make use of services such as Dropbox or Google Drive.

If I ever have my phone swiped by an overly curious seal at an aquarium, I can rest assured that the picture I'd just taken of said seal balancing a ball on its snout is safely in the cloud.

And it's not just consumers who love the cloud. In fact, as of 2016, 95 percent of IT companies make use of cloud services[94].

At the enterprise level, *more and more companies are coming to depend on public clouds to handle their computing workload,* with 17 percent running over 1000 virtual machines in the cloud (up 4 percent since 2015).

But did you realize that the cloud also has tremendous implications for digital signage?

Digital signage has been around for a long time. The cloud didn't exist when digital signage began, so these companies relied on local area networks, hosted on on-site servers.

The issue within this concept is that every time technology would change, businesses had to invest in new hardware and software. That is, until cloud-based digital signage came along, promising a radical new model of device and content management and collaboration.

Keep in mind... not all clouds are created equally. It is important that end-users investigate security, scalability and speed.

Even today, some cling to on-premise software *claim* that it's more secure, can update content faster, and is cheaper than the cloud-based digital signage Software as a Service model [84].

In this chapter, we'll explore whether those claims hold water, explain exactly what cloud-based and on-premise digital signage mean, and ask whether the cloud is right for you. Get you PDF here.

Understanding Cloud-Based Digital Signage

Note: We're focusing on public cloud services, rather than private cloud solutions. Private clouds are on-premise solutions.

> **Cloud-based digital signage software is an "invisible" solution. Someone else takes care of the behind-the-scenes work for you.**

Want to see how it works?

A cloud service provider owns a large server farm.

You may be provided with a predetermined amount of storage space such as 30GB (for example) for

no charge from your CMS provider, or pay a monthly or yearly subscription fee for space on those servers, the software necessary to stream your content to your digital signage, and so on.

Having to pay a monthly or annual fee for use of software is known as the Software as a Service (SaaS) model—you don't own the software outright.

Depending on your provider and which options they offer, you might purchase hardware that's preloaded with the necessary software to create and stream your content, or you might just pay to license software and load it onto your own hardware, or a combination of the two where a nugget is on the device and it calls home for setup.

Your digital signage network's content is hosted on and streamed via the Internet from that offsite server farm.

Pros

We'll take a deeper dive into the pros in the "Top 8 Reasons Why Cloud-Based Digital Signage Is Right for You" section below. Trust me, there's a lot of them! This section is just a quick comparison to on-prem solutions.

The System Isn't Dependent on One Computer

Because it is a cloud-based solution, the user doesn't need to rely on a computer (or system of servers) in the back room for their digital signage campaign to function.

This is ideal for most companies because cloud-based solutions perform automatic software updates, support, and ensures the IT team doesn't have maintenance issues.

Enterprises and SMBs love this convenience and peace of mind, and of course not worrying about internal IT resources. 24 percent of SMBs surveyed running all of their cloud computing on public clouds (versus on-premise)[94].

A Back-Up System Keeps You in Business

Most cloud-based software is designed to cache the content on the media player[85].

Caching means that new content is downloaded to and stored on your media player at regular intervals, ready for playback. This means if there is an interruption in the Internet connection, the cached playlist will load and play a back of the content seamlessly.

It also means that the content isn't continuously streamed from the Internet, meaning you save bandwidth.

Cons

Content Doesn't Update During an Internet Outage

If there is an outage, the currently scheduled content will continue playing.

Here's the catch.

Any content that has been updated via the cloud won't update on related kiosks or commercial grade screens until the Internet comes back up.

As soon as the Internet comes back, any new content will appear.

Regardless, the lag time of missing "new" content is an issue for some. If so, these end-users may choose to manually push content via USB if the internet is going to be down for any period of time.

Take Caution of On-Prem Scams

True end-to-end cloud-based digital signage has some great advantages.

But are you sure that's what you're paying for? Or have you been taken in by **cloud-washing**?

> **Cloud-washing is when vendors take a solution meant to run on-premise and hand it over to a local value-added reseller (VAR), who runs it on their servers. I.e. a Private Server, not well-known public servers such as Google or Amazon Web Services (AWS).**

The vendor doesn't host or maintain the solution. When you subscribe to it, it's more like you're just tapping into an on-premise solution hosted by someone else.

But the vendor still calls it a cloud-based solution—tricking you into an inferior cloud service.

Trust me, it's a real problem:

83 percent of surveyed companies expressed frustration with having to wade through the fine print on cloud solutions to find out whether they're *even actually cloud solutions*[86].

Why Does It Matter?

Here's just a few reasons.

- **Decreased security:** Does the local VAR have properly robust security measures in place? Probably not—most are stretched thin on resources already.
- **Painful updates:** Because the VAR is a middle-man between you and the vendor, software updates may take months to reach you (if they even reach you at all!) Frequently VARs allow server updates to become far out of date in favor of "if it ain't broke don't fix it." *This leaves gaping security holes in the solution* (not exactly what you want in the system controlling what content is displaying on your signs!) Since all customers aren't hosted in the same place, they'll have to be issued updates one at a time. You may even be charged for updates and upgrades, and have to wrestle with compatibility issues on your own or pay for a consultant to come in.

- **Lowered product quality:** This is the big one. Falling for cloud-washing means wrestling with compatibility problems, struggling to customize your use, and potential server down-time.
- **Increased costs:** Instead of subscribing to both the software and the hosting from one source, you're basically paying for them separately. Bringing in a middle-man means higher costs for you. Not only that, but instead of the service being scalable and you only paying for what you need, you'll have to buy extra software licenses in case your needed capacity increases. What a waste!

How Do You Spot It?

Unfortunately, unless you're going with a true giant of cloud computing, it can be tricky to spot a fake cloud at first glance.

But with a closer look, and a few strategic questions, *you can find out the truth*. Here's what to ask.

Do they meet the definition of cloud service? According to the US National Institute of Standards and Technology (NIST), at the simplest, cloud services should be on-demand and self-service, and scalable/elastic[87].

What security measures do they offer? For many companies, their content needs to be secure because the information being shared is for "eyes-only" (e.g. employee engagement, KPIs, and other internal numbers). Ensure the CMS transmits your information in an encrypted format when you load into the CMS, it's stored in an encrypted format, if moved between data centers then it's encrypted in transit. If security is a concern for you, then make sure that when your content is cached on the media player, it's encrypted.

What's their stance on multi-tenancy? Multi-tenancy is an essential component of cloud computing. It means that all companies using the provider's product are served from the same cloud.

This saves costs, because it allows maintenance to occur all at once, and assures that all customers access the same product[88].

Some cloud washers try to claim that multi-tenancy weakens the product, but in the end, *that's an excuse, and simply not true.* If multi-tenancy is good enough for Google, it's good enough for you.

Can you customize the service? On your end, you should be able to develop custom applications *without paying for expensive consultations.* You should also be able to integrate the cloud solution with other applications and web-services[89].

Of businesses surveyed, 13 percent ran apps on one of Google's cloud services, but with the company's support for digital signage apps and its kiosk mode (which we'll talk more about in chapter 7), it's looking like an even more attractive option for those wishing to use the cloud for digital signage.

Furthermore, you should have the guarantee that when the software updates, it won't stop working with the other solutions you've integrated it with.

Who Uses It?

There are *very few situations* when cloud digital signage isn't a viable solution.

> **Think very simple, single location digital signage that has limited updates or changes, where it would be more cost effective to just update content by hand or to use freeware rather than paying a monthly subscription fee.**

Of course, *in that situation, an on-premise solution complete with servers would be too expensive as well.* And what if someday you decided to expand your digital signage? You'd long for the scalability the cloud provides.

Think about how the cloud could work for you, too.

Use-Case: Automotive Broadcasting Network

The Automotive Broadcasting Network (ABN) is a company that provides auto dealerships with targeted, customized TV programming designed to engage customers and show off car products.

In 2015, they decided to expand beyond the waiting room and start offering content for other areas of the dealership—for example, digital menu boards at the parts counter (with parts lists, prices, and details), or displays showing cars in action in the showrooms.

Because they provide custom content to dealerships across the United States, on-premise signage just wouldn't cut it.

The cloud allows them to deliver that content seamlessly to *more than 1,200 displays* across 42 states.

Multiple customers reported that their new digital signage led to marked increases in sales.

Understanding On-Premise Digital Signage

A hosted digital signage content management system also delivers content to players (like kiosks or touchscreens), only it's delivered from an on-site server that is hosted and maintained by your company.

Content may be delivered via the Internet, or, more likely, by your own network.

This delivery isn't able to stream your content to several remote players, unless they are fairly close to your on-site server.

Are you spotting some limitations already?

Pros

You Don't Need an Internet Connection

On-premise software is operated locally.

That's right. *You don't have to rely on an internet connection* to keep your content moving.

If the Internet signal is somehow disrupted, your content will still show up because you're not using the Internet to begin with.

> **With cloud-based signage, an Internet signal is needed to download new content onto media players.**

If your digital signage relies on real-time data and instant updates, or if you live in an area where your Internet connection is unreliable, on-premise might be your best pick... or at least having a cloud-based solution that caches content to the media player.

Potentially Increased Security

As we'll talk about in #6 below, cloud-based signage has more-than-sufficient security protocols for most purposes.

The companies who host your data and run your software will use encryption to protect your content, plus offer regular security patches and bug fixes as vulnerabilities come to light.

Furthermore: **It's highly unlikely that your network is more secure than the public cloud giants.**

However, if your digital signage system isn't connected to the Internet at all, but is instead entirely hosted locally and streamed through cables, on-premise digital signage could be more secure. Someone would actually have to physically come into your location and intercept the signal to steal your data.

While this kind of setup would have disadvantages of its own, since **you yourself would have to be physically present to make changes in content or scheduling**, in situations requiring extreme security it could be worth it.

You Own It

Cloud-based digital signage typically relies on a Software as a Service model.

That means that *rather than owning the software*, you subscribe to it, often on a monthly basis. Depending on your provider and your own needs, you may also rent some of your hardware from them.

That's not the case with on-premise digital signage.

Once you purchase your hardware and software, **it's yours**. No monthly fees.

Do you like the sound of that? You might hope that after your up-front investment, with time, you may have net savings over what you'd pay for cloud-based signage.

But… Notice that I don't say there are *no* expenses. Read on to find out what they are.

Cons

Different Recurring Expenses

While you aren't paying a monthly subscription, that also means *you aren't getting some of the subscription benefits.*

Your software won't update automatically. You'll have to download and install updates yourself. And if a new version comes out, you'll have to buy it—or continue using old software, which may develop security vulnerabilities.

As your servers age, you'll have to maintain and ultimately replace them.

You can weigh those costs on your own, and *for some people, completely owning their digital signage system is worth it anyway.*

There is No Technical Support

Are you certifiably "tech-savvy?" If not, *this one could be a real trouble spot.*

Unlike subscribing to a cloud-based system, there's no tech support with on-premise.

If your software needs updating or your hardware starts acting wacky, you could be at a loss.

Unless you have a robust IT team, this could be **a factor that makes or breaks your decision** to host on-site.

You may be able to turn to the company from whom you purchased your software or hardware for help, but given that intense support will be needed, there will likely be a cost associated.

More Up-Front Costs

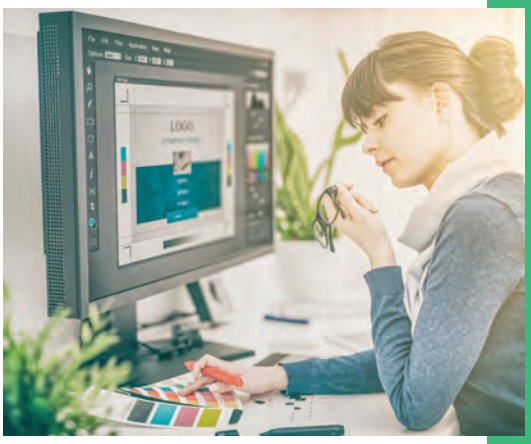
Hosting your own digital signage content incurs more upfront costs.

If you were to go the old-school route (locally hosted), you'd have to pay for any hardware up front, and that could put an unexpected dent in your wallet.

Not to mention ongoing software updates on every device across your organization. That means paying for more man-hours of maintenance.

If your company isn't already experienced at maintaining its own servers, you may need to hire an additional FTE IT support member who does have that expertise.

And that's in addition to the Content Champion/Manager and graphic designer you may also be hiring for your digital signage content needs.



If a business prefers to capitalize expenses, that may move this out of the Cons category and into the Pros category.

Limited Growth

As we've mentioned, once you purchase the necessary components, they're yours.

Here's the problem. That can be limiting.

Let's look at an example.

Your digital signage is a hit and you want to expand from ten signs to fifty. Can your servers support that number of signs?

It's up to you to find out… and then purchase, install, and troubleshoot additional servers if necessary.

Is your software only licensed for a certain number of screens or locations? If so, you may have to purchase additional copies, which may end up being different versions than the one you've been using, depending on how long it's been since the original purchase.

And you can pretty much forget expanding your network to more than one location.

Unlike a cloud-based network, where content is managed centrally from the CMS, there's no easy way to share content between locations, or share some content and localize other elements.

Who Uses It?

On-premise digital signage is most often used for highly customized, highly integrated applications; in situations when extremely high levels of security is desirable; or in situations when a single location has only a few signs.

Use-Case: Elizabeth Forward School District

For our example, let's turn to a small six-school district located near Pittsburgh.

The district wanted to share important announcements and showcase student projects in a vivid, dynamic way. They turned to digital signage to replace their outdated system of connecting laptops up to LCD players.

After their IT department spoke with several companies, they settled on a simple on-premise solution involving media players and Apple laptops that connect to a local area network (LAN) at each school.

The digital signage company also collaborated with the school district to create usable and attractive templates for content creation.

It took six months to implement the digital signage at the trial school.

The district said it's pleased with the solution and that parents love seeing their children's projects on display.

Which Triumphs?

Like all other aspects of digital signage, this question comes down to which one's right for you.

These are the three big factors you need to look at when you're deciding on a solution.

1. The size of your business.
2. The type of campaign you want to launch.
3. The message you're trying to convey.

For agencies like the NSA, or a company that legally requires security in-house without a public cloud ever touching the data, an on-premise solution with specialized internal security measures would be the best option.

However, if it's content for customers and it includes some sort of customer interaction[90], or is corporate communications meant to be sent to many locations, cloud-based is almost always the best fit.

Coming up next are eight more reasons why cloud-based digital signage could be your new best friend.

Cost and Return on Investment are often key drivers when users make a final decision. If up-front costs for on-premise aren't available, a cloud-based solution might be the best option.

And make sure you ask enough questions of your software provider so that you have a full understanding of the product you're investing in.

The Top 8 Reasons Why Cloud-Based Digital Signage Is Right for You

1. Rapid Delivery of Content

When it comes to distributing content across locations—whether it's two locations or two hundred—cloud-hosted content *gets there fast*.

Any user who has access can change or add content at any time, which will be nearly instantly sent out to all locations.

That means you have a way to quickly correct errors[91], such as a typo, pricing error, or listing of an item that is no longer in stock.

With traditional printed signage, these problems would have to be corrected by fixing price labels by hand, reprinting posters, and other laborious and expensive means.

Even with other methods of doing digital signage, getting updated information out to multiple locations might be complicated or take longer than… well, mere moments.

This also means you have **incentive and opportunity to innovate.** By lowering the costs associated with a flopped ad or other minor piece of content, you can afford to take risks.

Producing more content more quickly means you'll fail more often—and *also learn more quickly from those mistakes, and* ultimately succeed more often.

2. Cost Efficiency

Cloud-based digital signage *really starts to distinguish itself over on-premise digital signage* in the area of cost efficiency.

37 percent of respondents said the cloud saved them money over their previous solution[94].

With on-premise digital signage, you'll be facing some nasty surprise expenses.

If you want to host your own digital signage network, you'll need to purchase and set up your own server system, complete with meters upon meters of cabling, along with the necessary heating and cooling equipment to keep it running.

You'll need to pay your IT people to run and maintain the servers.

Any time you want to update or upgrade your servers, or update the software you're using to stream your content, you'll need to do it manually and at your own expense.

On-premise signage is a major up-front money and time commitment that many SMBs, in particular, might not be prepared to take on.

With cloud-based digital signage, **the upfront cost is relatively low**. In fact, some providers will provide you a free short term trial period so you can decide whether to commit to the service.

Service is the key word there. As mentioned, you're paying a single subscription fee to use the provider's servers, have them stream your content to you, rent hardware (if applicable), access 24/7 help lines, and license the requisite software.

Furthermore, your own IT department isn't responsible for keeping the servers running: your service provider is.

Still, some (26 percent of respondents) are concerned about cloud operating cost management[94].

Luckily, there are simple measures for minimizing cloud costs, like monitoring your usage and using that information to rightsize the instances you pay for. Only 45 percent of enterprises and SMBs take that step [94], though it's an opportunity for big savings.

Also consider shutting down workloads during times they aren't needed, a savings measure 33 percent of enterprises use.

And, bonus, if your service fees are charged on a metered basis, you are only charged for what you use[92].

3. Scalability

Start small… and dream big.

Cloud-based digital signage can support you whether you want to have simple slideshows running on a single screen, or stream full HD video to a thousand screens.

In fact, budget allowing, there's no reason you can't start with the first and eventually transition to the second.

Your provider will allow you to pay for additional bandwidth and storage space as your needs grow.

Scalability is one of the biggest advantages the cloud has to offer, with 58 percent of survey respondents saying the cloud has given them greater scalability compared to previous solutions[94].

And *unlike onsite options*, expanding your network won't mean sending the IT crew into a panic as they update and install more servers.

Whether you have one screen in one location, or 500 spread all across the United States, you'll be able to manage it all from your CMS. (See Chapter 4 for more information about that.)

Reputable cloud service providers also handle **auto-scaling and load balancing of bandwidth** so that as you add more screens and content, you won't experience crashes or data bottlenecks.

4. Easy Implementation

Time is money, and cloud digital signage is a deal.

You already learned how it saves you money (#2). Here's how it saves you time.

Getting your system running might be as simple as installing a screen preloaded with the required software and hardware, *connecting to the Internet, creating your content, and letting streaming begin.*

52 percent of survey respondents were psyched about the cloud's fast time to market compared to other options[94].

Depending on the company you go with, most interfaces are **template-based**, making it easy to drag and drop images, choose fonts, and create powerful content in no time.

Other interfaces allow you to continue using the platform you build in now. Those interfaces simply import what you've created and fire it off to your monitors and kiosks.

This means you can continue to use PowerPoint, Adobe Illustrator or any other program you're comfortable with.

There is *no special training* to learn how to use the software, nor do users drown in technical terms as they create.

Pretty neat, huh?

And with the right team, plus the good support mentioned in #5, questions can be answered and concerns addressed by experts who know what they're doing.

Even with larger systems, it won't be as complicated a task as setting up your own servers.

This will free your employees to **spend time focusing on your company's core competencies**, rather than struggling with a system they have a difficult time understanding, increasing your efficiency.

5. Good Support

If you have a good service provider, they'll be dedicated to helping your experience go smoothly.

They'll provide *free software updates* whenever those become available, which should download automatically to your digital signage network.

You can even set up your account so *downloads of content and updates occur at times of least demand for your network*, so as not to overload your bandwidth.

They'll be available for you to call or email any time an issue or question arises, and will work with you to resolve it quickly—because they're providing you with a service, and **it's in their best interest to have happy customers.**

They'll also help allay some common fears. For example, what if the Internet connection goes down?

Well, we actually that one for you, under "Pros" up above.

If you have any similar questions, you can ask your provider!

What's left for IT to do? When asked what the role of IT is when using cloud services, respondents mentioned choosing which apps to run on the cloud, advising which cloud service to choose, and setting policies for cloud use[94].

6. Security

This is a somewhat debated point.

Some fear that by putting your data in the hands of a third party and streaming it over the Internet, you're leaving it vulnerable to attack[84].

In fact, 29 percent of survey respondents cited security worries as a challenge in cloud adoption[94].

Don't worry yet!

Even here, cloud-based digital signage has certain advantages.

For one thing, your provider may, in fact, be able to **provide higher levels of security than your company's network can**, especially if you're a relatively small company[91].

They should stream using HTTPS, encrypting both the uplink and the downlink. Stored data will be encrypted and protected with firewalls as well.

For another, locating all of your digital signage-related data in one "place," rather than spread out across multiple machines and locations, may *help you reduce opportunities for leaks*[92].

It's not quite like storing all your information in a single vault, though: some advanced cloud storage companies use "cloud files"[85] to keep different types of information separate—so *a breach wouldn't give hackers access to all of your data at once.*

You'll also have to do less security testing across sites.

Backup playlists are put in place so that any disruption in a connection can be thwarted.

> ***The cloud uses the same protocol as the World Wide Web*—that very big space where millions of bank transactions are made securely and successfully every day[85].**

Of course this depends on which cloud you're using, but as an example, Google's cloud encrypts everything multiple times in transition and at rest.

The company you choose will handle all of these back-of-the-room functions, including software updates and security regulations.

7. Accessible From Everywhere

Anyone who has been granted the right permissions can access the cloud from wherever on earth they are—they don't need to be sitting at a company computer to do so.

In fact, this rapid access to infrastructure is the top-cited benefit to cloud computing, at 62 percent[94].

But access doesn't have to be one-size-fits-all!

You can grant highly **granular permissions** to different employees, only allowing them to make changes to the content for a certain number of locations or in certain kinds of ways.

This helps maintain central control of content at a company-wide level, allowing a high degree of brand consistency[93].

For example, a branch manager might be able to add content of his or her own, but not alter certain files that every location uses.

Or, one team member at the local level can be in charge of scheduling and downloading content.

8. Data Collection

Digital displays can do more than just show content.

With the Internet of Things showing up loud and proud, digital sign campaigns can also collect much-needed data. This collected data can be the catalyst that helps improve the ROI, all of which is stored in the cloud.

Case in point:

When big box stores prepare to order product, they need to know how much to order and when peak selling times are. Sometimes these peak selling times are affected by the weather and the seasons.

If the weather breaks and it is suddenly colder than usual, coats and space heaters may fly off the shelves faster than normal.

This trend is tracked and stored in the cloud, enabling retailers to be prepared for the same possibility the following year.

On the other end of the spectrum, if sales are slow and retailers end up with too much inventory, managers can review trends and create promotions to help move inventory.

By changing advertising to automatically sync with current inventory levels, retailers can avoid losing money on unused stock while offering different options and specials to customers.

To Sum Up...

Despite sounding like a wispy concept, cloud-based digital signage is actually a solid choice for many reasons. It even offers advantages over on-premise networks.

It's a low-cost solution, especially at its basic tiers, compared to the difficulty and cost of purchasing, installing, and maintaining your own servers.

It's easy to get started with and, thanks to good cloud service providers, easy to maintain, leaving your employees free to focus on other tasks.

It's scalable—it can grow with you.

It's secure. The provider encrypts your data, both while it's stored and while it's streaming; and you have total control over who can access the files and what kind of changes they can make.

In other words, rather than dampening your performance, pairing the cloud with your digital signage is sure to brighten your day.

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