SKYKIT®

Digital Signage Guide

10 Digital Signage Topics You Need to Know Before Buying

7

Google Chrome for Digital Signage

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Google Chrome for Digital Signage

Google has been making waves in the digital signage market for about two years. They've made it clear that *Chrome is here.*

The Google ecosystem has compelling hardware / media players available to run your digital signs. Chrome provides a platform for innovation.

Chrome-based digital signage solutions are by far the [most secure](#), easy to manage, scalable, and easy to implement.

Here's why:
Digital signage through Chrome is a truly end-to-end cloud-based solution. Chrome takes care of it all.

Remember what I talked about in Chapter 6 about the dangers of the "fake cloud" and not updating new versions and security patches?

Chrome bypasses all those concerns that are very real for other platforms.

You can choose **Chrome OS** for your media players, manage those devices from the **Chrome Management Console** (CMC), and control your content using a **CMS from one of Google's partners**.

All your software [runs in the Cloud](#). All your data is stored there safely. Plus, you get to harness the cloud for collaboration.

And among their many product options, there's solutions for everyone from SMBs to enterprises. **In this chapter, I'm going to walk you through each of Google's media players and give you a leg-up in deciding which is right for you.** [Get your PDF here](#)**.**

The Hardware

The hardware required to complete a digital signage solution is typically a commercial-grade screen and a media player. There are lots of options out there for displays, which we explored in Chapter 5, but now it's time to look at the media players.

There are also lots of options out there for media players, and for Google, that includes the **Chromebit**, **Chromebase**, and **Chromebox**. We'll also enlighten you about Chromecast, but Chromecast is not recommended as a commercial-grade digital signage tool.

It can be confusing to determine which device you need if you're considering Chrome for digital displays.

What's the difference between the three? What are the [pros and cons](#) of each?

We're about to end any confusion you might have regarding these three options, giving you clear definitions on **what each does, how the hardware options can best serve you**, and what the **pros and cons** are of each.

AOPEN | hp | acer | ASUS | Lenovo

Chromebox

You probably remember the Chromebox from Chapter 5, but we're going to take another look and see how it measures up to other Chrome solutions.

The Chromebox, born in 2012 , is small form-factor computer box that runs on Chrome's OS.

The idea is that you can set the box on your desk, plug in a screen, mouse, and keyboard, and set up your own little desktop computer… or skip the mouse and keyboard, plug it into a commercial-grade screen, and use Chrome's kiosk mode to lock-down functionality and now you have a fully functioning digital sign.

How it Works

Chromeboxes primarily support a single application at a time.

They *rely heavily on an Internet connection for software functionality and data storage*. That connection, via a local area network, can be wireless or through an Ethernet port.

The user hooks up their Chromebox to the display via HDMI and connects to the Internet.

If the user subscribes to Chrome Management Console, he or she can take a few seconds to enroll the device to allow it to be configured remotely.

After that, if working with a digital signage CMS (one of Google's partners might be able to provide an attractive solution) once the player is connected to the network, the visual display shows the content.

The Chromebox syncs and locally caches the content (so it can still run if the connection is choppy).

Instead of tasking someone to code an application, *it's just a matter of using CMC and your preferred CMS to push the desired content* to the appropriate devices.

Cost and Models

$159 – $675 (depending on model)

> *There's not just one sort of Chromebox—in fact, there's one to suit the needs of just about anyone.*

That makes it a little tricky to sum up the Chromebox's stats, since there are many models made by different companies.

Standard features include a 16 GB SSD, Wi-Fi, and Bluetooth 4.0, at least 4 USB ports, Ethernet, DisplayPort, HDMI, and an SD card reader.

Below, you'll find a rundown of the offerings from a number of major original equipment manufacturers (OEMs).

Asus

Asus is known for consumer media players, but they perform well and are commonly found in commercial settings. Part of this is due to the small form factor, a compact 4.88 x 4.88 x 1.65".

You can choose between several different processors: Intel® Celeron 2955U ($179 MSRP), i3-4010U ($369 MSRP)[95]. The i3 model comes with a keyboard and mouse.

Acer

Acer's Chromebox CXI models are also aimed at the consumer market, with all-plastic casing and a noisy fan. They're still solid products.

At 1.3 x 5.1 x 6.5", it's compact, though not the smallest. There's options with processors and memory[97]. The CXI has a 1.4GHz Intel Celeron 2957U processor and a choice between 2GB ($179) and 4GB ($219) RAM.

There's options with an Intel i3 processor, able to play up to 4K video. The first, Acer CXI-i34GKM, has 4GB RAM ($349); the second (CXI-i38GKM) has 8GB RAM for $399.

Worth noting: *If you're hoping to upgrade the memory or hard drive yourself, you're out of luck*—the case is hard to open without damage and parts difficult to extract[98].

AOPEN

AOPEN offers a robust (if pricey) commercial Chromebox option[99].

In fact, it's currently the *only* commercial Chromebox designed for digital signage use.

With three and five year warranty options, a wide temperature operating tolerance range, metal casing, a solid state drive, and fanless construction, *the Chromebox Commercial is built to withstand stressful environments* that might cause consumer-grade Chromeboxes (with their fans and plastic construction) to fail prematurely.

And while the device isn't pretty, *at only 25 mm thick it's easy to hide.*

On the technical side, it boasts a Intel® Quad Core N2930 processor with 4GB memory, plus dual screen support.

The price may be a barrier, though: with an MSRP of $429 a pop, you're definitely paying for that commercial quality.

Lenovo

Lenovo was a Chromebox latecomer, but brought its own twist with the ThinkCentre Chromebox Tiny[100], which is small compared to a desktop computer, though not quite tiny for a Chromebox, at 7 x 7.2 x 1.4".

Built of aluminum with a plastic front panel, the Tiny has some great security features, like data encryption and a way to disable USB ports to prevent unauthorized access.

Technical specs include an Intel Core i3-5005U Dual-Core processor with 2GB memory ($240 on Amazon), or a Intel 3205U processor with 2 or 4GB memory (both about $150 on Amazon).

Lenovo also offers the ThinkCentre Tiny-In-One, which is a tool-free way to convert the Tiny into a 23" All-In-One display.

HP

The HP offerings match Asus in terms of tiny size: 4.88 x 4.96 x 1.54".

HP aims its models at enterprise buyers, offering rack mounts and other accessories.

Here's the choices[101]:

- ⋄ Intel Celeron (2955U 1.4 GHz) processor with 2GB of RAM, $179 MSRP

- ⋄ Intel Celeron (2955U 1.4 GHz) with 4GB RAM, $199

- ⋄ Intel Haswell (4600U) Core i7 processor with 4GB or 8GB RAM, starting at $629

The last option has the same specs as Asus's Core i7 offering, but it's available on its own, rather than in a bundle[102].

It's often described as blazingly fast.

And this is just the tip of the iceberg.

Samsung also offers a Chromebox, and that's not even to mention Chromebases. (Don't worry, we'll get to them.) Plus, there may be models we've missed.

You'll have to do some comparison-shopping of your own, but this should be a good start.

But none of the options are terrible. Like every other aspect of signage, *it's about which one's right with you.*

Pros:

- ⋄ Central Management
- ⋄ Kiosk Mode
- ⋄ Upgradable RAM
- ⋄ Automatic software upgrades
- ⋄ Various models to choose from that support different requirements like 4k
- ⋄ Security and virus protection
- ⋄ Low power demands

Cons:

- ⋄ Requires an internet connection to receive updates

Who uses Chromeboxes for Digital Signage?

Because of the Chrome Management Console, it's easy to use Chromeboxes to control many screens on a large scale. **It's a true enterprise-grade solution.**

You'll find Chromeboxes behind digital signage *everywhere from* retail stores *to universities.*

Here's just one example.

Clothing retailer Chico's had a massive project in mind: deploying up to 5,000 screens at some 1,500 locations[103].

They envisioned personalized content down to the store level, and control over each individual screen. They settled on HP Chromeboxes, because, according to CIO Eric Singleton,

"Since they're cost-effective, we can afford to outfit more of our stores with more displays. Since they're small, they don't take up valuable space in stores and they are unobtrusive. With more screens, we have more places where we can tailor content that resonates with each store's customers."

As a trial run, they outfitted one store with 10 screens, and quickly began to see the benefits.

Their previous promotional strategy, traditional printed signs, had a lead time of about ten days.

> With digital signage, *they can showcase new items and sales within minutes*, a huge advantage in the ever-changing retail vertical.

Eventually, they hope to almost completely replace printed signage with Chromebox-driven digital displays.

What is a Chromebit?

How it works

Chromebit, born in 2015, is a small device that runs on Google's Chrome OS operating system. The stick-like device closely resembles a thumb drive.

The Chromebit, when plugged into the HDMI port of a monitor, acts like a tiny personal computer, with access to the Internet and Google's browser-based apps.

It's seemingly similar to the **Chromecast**, but in fact, **it is in a completely different class of machines**—it IS a general purpose computing tool.

It's functionally equivalent to a Chromebook, without the display or keyboard.

So you can think of it as a $85 computer on a stick. The Chromebit is more functionality aligned with a Google Chromebox, with the same performance capabilities, but without the ethernet port or multiple peripheral ports. It allows the user to add a Bluetooth keyboard or mouse.

Because of this, the Chromebit provides more functional capabilities, complexity and flexibility than the Chromecast.

Cost

The average cost of a Chromebit is **$89**.

Pros

- ⬥ Swivels, fits into small places.
- ⬥ Great option for mobile workers.
- ⬥ Comes with 100GB of Google Drive space for documents, photos, and other files[104].
- ⬥ Can be used as a portable kiosk.

Cons

- ⬥ Not the best solution for video content
- ⬥ Offers only 2GB RAM, 16GB internal storage.
- ⬥ No internal clock. So if you're using it for day-parted content and it reboots, it won't know what to play because it doesn't know what time it is.

Want some techie-friendly stats to go with your pro/con list? We've got your back.

If it's too jargon-heavy for your tastes, though, feel free to skip down to "How would I use it in my digital signage campaign?" You've already got the jist of it.

Performance

The Chromebit has 16GB of storage and 2GB of RAM (same as most Chromeboxes). It's powered by a 1.8GHz Rockchip, RK3288-C CPU with a separate ARM® Mali™-T624 GPU.

The Chromebit was tested side-by-side with the Asus M004U Chromebox with an Intel Celeron 2955U CPU and embedded Intel HD Graphics 4000/4400. While it wasn't a true scientific performance analysis (just played the same content on the two media players side-by-side) **the two devices running a digital signage application with the same content**—still images, 1080p full motion video and stereo sound—**performed identically in terms of playback**.

The Chromebit warmed up more than the Chromebox, most likely due to a smaller heatsink in the Chromebit form factor. Any performance differences were imperceptible watching both devices side-by-side.

Networking and USB Connectivity

The Chromebit includes 802.11 a/b/g/n/ac WiFi.

Connectivity is rock-solid and there were no perceptible performance differences between the Chromebit and the M004U Chromebox unit.

Networking performance was also very good when running the Chromebit as a computing device, browsing the internet and/or working with Google Apps.

The Chromebit was also tested with a USB Ethernet connection, turning off the WiFi through Chrome management. This worked just fine, but the device may be more cumbersome to physically manage in this configuration.

A keyboard/mouse combo connected with a small RFI USB adapter worked very well, as did the Bluetooth connection (Bluetooth V4.0 included).

Enterprise-Enabled Chrome Management

The Chromebit truly stands apart from other stick-based PCs when it comes to enterprise management.

The Chromebit is a **Chrome OS device,** meaning *it can be fully managed, remotely, in enterprise environments* via Google's Chrome Management Console and enterprise enrollment.

Power and Display Connectivity

The Chromebit plugs directly into a display's HDMI port, or alternatively connects via included HDMI extension cable for tight connection locations.

The Chromebit includes a small separate 18W power supply that requires an AC power connection. A USB-powered device would be ideal, but the Chromebit requires a little more power than that to operate.

How would I use it in my digital signage campaign?

Thanks to the Chrome Management Console, you can manage thousands of devices and remotely control your content showing on each display.

> **The Chromebit makes for a perfect digital signage player where wireless networking is a requirement.**

The low-cost, small form factor, and enterprise manageability make the Chromebit the clear leader in terms of price/performance/management/size.

This device can be used for enterprises and other large-scale businesses, *though SMB will find the price point attractive as well.*

What else can I use it for?

If you need to power your guest kiosk[105] or want an electronic sign-in option at your desk, the Chromebit can accomplish that for you. Add a display and you've got a nice little space to direct guests who might also need Internet access.

Schools can use this same kind of option to track library books. Larger schools, like colleges and universities, can use the stick devices as a portal to access the school's learning management system.

What is a Chromebase?

The Chromebase, first unveiled in 2014, *marks Google's dive into integrated display*s[106]. Think a Chromebox built right into a screen.

How it Works

Thought of another way, a Chromebase is basically the desktop-sized equivalent of a Chromebook. It runs Chrome OS, and is thus heavily focused on web-based applications.

Just like a Chromebox, the Chromebase can be easily enrolled in CMC for remote management and configuration. It can also boot directly into kiosk mode. You can connect up a keyboard and mouse, if desired.

Basically, *all you need to do is plug it in, connect it up to the Internet, and start pushing content to it from your CMS.* Content can be stored on the Chromebase or streamed over the Internet (safely cached in case your connection crashes).

Several models offer additional features, such as a webcam and touchscreen capability for interaction, or the possibility to attach POS peripherals.

Cost and Models

$300-1,099

As with the Chromebox, there are several models on the market. Here's a summary.

LG

LG's 21.5", full HD Chromebase is *relatively affordable at $280 per unit*, but not quite ideal for an enterprise setting[107].

With a 1.4 GHz Intel Celeron processor and 2GB of RAM, it's similar to most Chromeboxes in terms of computing power. Storage-wise, it's got a 16GB SSD and two years of access to 100GB on Google Drive.

It's EnergyStar rated.

The LCD screen is **not touch-sensitive**.

Probably the biggest drawback to this device is its built-in stand[108]. With no good way of detaching it, you're stuck using this Chromebase on a table or desk. You can't wall mount it or build it into a kiosk.

Ultimately, it looks like something more suited to an office desk, and has only a 1-year limited warranty. It's not quite an enterprise-grade Chromebase.

Acer

Acer currently offers 21.5" (touch and non-touch) and 24" (touch and non-touch) versions of the Chromebase. All are **full HD, with LED-backlit LCD screens**. The touchscreens have 10-point multitouch capability.

Right from the get-go, *it looks more like a digital sign than the LG model, since it doesn't have a stand*—though

the speakers built in to the bottom-edge bezel are obvious and a little bulky depending on what you're going for.

The 21.5" model ($300 without touch capability, or $430 with) has a Tegra 2.1 GHz processor, 4GB RAM, and the same standard features as the Chomeboxes discussed earlier do[109].

The bezel is white, which might stand out in some settings.

The 24" models seem to be optimized for teleconferencing, with a built-in HD webcam and microphones. The bezel is a subtle black. Able to tilt between -5 and 30°, the stand is designed to work with **VESA mounts for wall or arm mounting**[110].

And then there's the all-important **security features**, like a Kensington lock slot, built-in encryption, and Verified Boot, which checks files for tampering each time the screen boots up.

Since there are five different models (ranging in price from $430 for the touchless to $900 for the top-of-the-line touchscreen).

Differentiating factors include amount of RAM, 16 vs 32 GB SSD, and Intel Celeron vs. i5 vs. i7 processors[110].

AOPEN

AOPEN's solutions are **truly designed for commercial settings**, with tempered glass, semi-waterproof fronts, a screen capable of staying on 24/7, and a mere 30 mm depth. You can choose between a 3 and 5 year warranty[111].

Unlike all the other models, it doesn't have a fan, making it **silent and**

dust-proof. Despite being fanless, it has a **wide temperature operating range**, up to 104°F.

It's right at home in kiosk or POS applications. Like the Acer models, it has 10-point touch capability.

But beyond that, it's got tons of powered peripheral ports meant to connect up to other gadgets, such as a card swipe. It's meant to be **tamperproof**.

Under the hood, there's an Intel Quad Core processor, 4GB RAM, and a 32GB SSD.

Currently it only comes in 22" size, with an MSRP of $1099, though a 19" screen is set to *release eventually*[111].

That price tag is the rub.

Add a $24/device/year single app CMC enrollment, or a $150/device perpetual enrollment to CMC, and you've got an investment that only an enterprise with a hefty budget could swallow.

Pros

- ◇ All-in-one convenience
- ◇ Central Management
- ◇ Kiosk Mode
- ◇ Security and virus protection
- ◇ Automatic updates
- ◇ Touchscreen models available

Cons

- ◇ Fewer choices in screen sizes and types
- ◇ Obtrusive bezels on some models
- ◇ No signal-splitting
- ◇ Potentially high costs compared to Chromebox

How Would I Use it for Digital Signage?

Despite being a recently developed technology, Chromebase is already being successfully deployed in retail and QSR settings.

Here's an example:

In early 2016, Australian seafood franchise Famous Fish decided to bring a fresh look alongside its fresh fish at a newly opened franchise[112].

That meant bringing in digital signage: dynamic menu boards and self-service order kiosks.

After hearing good things about Google's security and reliability, Famous Fish settled on AOPEN's Chromebases. They found that the screens blended into their clean seaside aesthetic seamlessly.

Plus, since their customers now had the the ability to explore and ponder options on their own, *the average transaction value jumped to nearly 28 percent higher than other locations.*

They now plan on rolling out Chromebase to other locations.

How Else Can I Use It?
Your use-cases are slightly limited by the size and durability of the screens. Most seem to be designed for indoor use only, and due to the width and shape of the bezels, none are suitable for tiling into a video wall.

Other than that, though, *Chromebases should be suitable for many digital signage applications*, from end-cap advertisement, to donor boards, to indoor wayfinding, to sign-up kiosks, to self-service check-out devices.

What is a Chromecast?

Let's clear this up right away: the Chromecast **was created as a consumer product, not for enterprises or for digital signage.** Since it can display content to a screen, many people have the misconception that it's a digital signage solution. That's the only

reason we're including it here, is to clear up the misconceptions.

Short answer: **the Chromecast is not a digital signage solution**. It's not even a true media player.

Long answer: you could hobble along if you really wanted to. More on that in just a second.

Chromecast, born in 2013, is a media-streaming device that plugs into the HDMI port of a screen, allowing the user to stream content. The device is small and is shaped like a mini hockey puck.

How it Works

The small, round device plugs into your HDMI port and connects to a Wi-Fi network. It acts as a portal for the content on your computer or smartphone to be played on your display.

> *The Chromecast, as its name implies, is intended to "cast" content from one location such as a computer, tablet or smartphone, onto a display.*

The Chromecast includes apps such as Netflix that can cast content streamed from the internet onto the same display.

Cost

The average cost of Chromecast is $35.

Pros

⬧ Because the content is streamed directly from the Internet, the battery on your phone or computer won't drain quickly.

⬧ Chromecast now supports 4K streaming

Cons

⬧ Requires a dedicated device (computer, phone, or tablet) to stream content for every location, making it an expensive and complex solution if you try to scale

⬧ No central way to manage content for multiple screens or locations—you don't get access to the Chrome Management Console with the Chromecast

⬧ Not compatible with Blackberry or Windows Devices.

⬧ Requires a strong Wi-Fi connection.

How would I use it?

If you're a small business with just one digital sign in your store, the Chromecast *might* work for you if you're okay with having a dedicated computer or device to stream the content.

Likewise, if your digital signage objective is to learn about digital signage and maybe experiment with a single sign, then the Chromecast might be a good place to start.

Here's the drawback:

Using Chromecast for more than one display makes it difficult to manage because there is no central management solution—they **can't be enrolled in the Chrome Management Console.**

Because of this, it's hard to scale support for this with content for multiple signs because you have to have another device at each and every location that's pushing content to the Chromecast.

If you have 10 screens and need to update the content, you have to make 10 changes - going to each physical device to update.

The **security for the Chromecast is light at best.**

Change your WiFi security code or SSID and you'll have have to do it all again, at every display.

What if some accidentally logs-in to one of your content source computers and starts browsing the web? There's no kiosk mode, as with Chromebox.

What else can I use it for?

But just because it's not meant for digital signage doesn't mean it's not a great tool for the office…

This little number is ideal for presentations[113].

It can also be used to play games. There are about 100 games for Chromecast that can be found in Google Play.

Which Chrome Device Makes the Best Media Player for Digital Signage?

Every digital signage campaign needs a media player to support the content that will be used in the campaign. Depending on your company and what you're trying to accomplish, the Chromebox, Chromebase, or the Chromebit could be your answer.

Chromebox is *a great all-around solution, with many model types to accomplish different goals.* While the Chromebit can alternatively accomplish a similar thing on a much smaller scale, the Chromebox packs more of a punch.

The Chromebox is *the enterprise-grade digital signage player* from Google.

Chromebase is a still-emerging Chrome OS technology. While options are currently limited, the *all-in-one nature is incredibly convenient* (provided the screen meets your needs). It can do everything a Chromebox can.

Aside from AOPEN's model, though, none are optimized for a commercial setting.

Chromebit is *a solid digital signage player at a great price* but cannot support 4k video and has limited power. Unlimited devices and displays can be controlled remotely with this option, thanks to the Chrome Management Console.

Chrome Device Management (CDM) and Chrome Management Console (CMC)

There will always be the 1-2 person donut shops that plug in a flash drive to a monitor and showcase a slideshow they made in the back office a few minutes ago with their specials.

And for them, that works.

But if you're a 20-location donut empire, then you have multiple layers of complexity to navigate.

Some common ones I've seen are:

- Maintaining brand guidelines

- Ensuring all locations are showing the same promotions: it's difficult to change a promotion last-minute when you're dealing with so many locations. Relying on store managers to receive your email and download a presentation onto a flash drive is time-consuming and never has 100% success.

- Communicating with employees about events coming up and giving them a briefing over promotions

- Displaying company news

> **Many companies that operate with multiple locations use digital signage solutions to be able to do all of that at scale.**

And that means finding the right device management system.

Since Google Chrome's operating system, **Chrome Management Console and Chrome Device Management (CDM), single app kiosk license,** is *perfect for digital signage*, it's a wonder that not all solutions use it.

This is perhaps the Chrome's best feature.

After subscribing to the Chrome Management Console service ($50/device/year for full use, or Chrome Device Management **$24 for a Single-App Kiosk license**), all the administrator has to do is enroll each new device in the system, which *takes just seconds to do*[114].

And then, they can control every aspect of every screen, from anywhere they want to.

If you're part of the education vertical, you'll likely get a discount on the license fees.

Side note: You're more likely to want the Single App license for your devices if you plan on using them exclusively for digital signage.

That will give you access to *all the settings necessary to configure, deploy, and monitor a device running a single app in Kiosk mode*. You won't be able to use that device as a workstation, or manage and deploy policies at the user level[114].

1. Managed

The Chrome operating system and the corresponding Chrome hardware is a **managed system**.

Once the device is enrolled in a domain, the administrator has the ability to manage every aspect of the device.

In the realm of digital signage we have the ability to restrict the device to running the signage application only—that is, putting it in Kiosk Mode.

This means that the device cannot be repurposed without an administrator intervening.

Here's why that's important.

Let's say you have a Chromebox running your digital signage in the employee break room.

A clever employee may think they could plug a keyboard and mouse into the device and be able to surf over lunch. Thanks to Chrome OS management, the device is *restricted to digital signage display and support personnel only.*

The entire Chrome OS management console is accessed through the web, **which means that people with administrative access can manage your devices from anywhere** (even your mobile device).

2. 0-60 Rollout

The managed capability also allows for fast and easy rollout, since the only step an administrator needs to take is to enroll the device into their domain.

At that point, *all the necessary settings, policies, and configurations are automatically downloaded* to the device. For a digital signage administrator, this means that in mere minutes you can have your entire signage fleet up and running, and you won't need to install a thing!

This same benefit means that if you need to rollout an additional series of displays you won't need to waste time installing software, setting up policies, or configuring apps.

A display administrator only needs a few seconds to enroll the device and **it will automatically obtain all the necessary policies and applications for its purpose.**

3. Secure

> **Chrome OS is built from the ground up with security in mind.**

With features like *verified boot and data encryption* you can ensure that no malicious software can ever take over your system or data.

Unlike other operating systems, Chrome OS allows a digital signage administrator to automatically run their digital signs right when the machine turns on.

And, like I mentioned, it also prevents users from hijacking the device for other purposes.

Google's security team is constantly *seeking out vulnerabilities* to patch and *sending out automatic updates.* It's been hailed by many as **the most secure operating system** you can get.

4. Update automatically

Chrome OS is **automatically updated seamlessly in the background**.

This negates the need for additional patch management systems or manually updating your fleet of devices.

Gone are the days of administrators needing to worry about making sure their devices are updated, or making sure that latest security vulnerability was patched.

Chrome Management takes care of this and even *gives the administrator control over timing and distribution of the patches,* so you can automatically scan for updates every morning at 4 a.m. when there's the lowest bandwidth usage.

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