Technical Review

Google Chrome OS

Accelerating Device Lifecycle Management

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Abstract

This report documents ESG's hands-on testing of Google Chrome OS and Windows laptops with a goal of quantifying the speed of deployment and device lifecycle management benefits that can be achieved with Chrome Enterprise.

Enterprise IT Challenges[1, 2]

64%	**52%**	**34%**	**72%**
Enterprise IT is more complex compared with two years ago	more than 80% of knowledge workers are working from home	IT was under-prepared to provide all employees with work from home devices	IT is not increasing their spending on mobile endpoint devices

COVID-19 Pandemic

According to ESG research, IT still isn't getting easier, driven by higher data volumes, a changing cybersecurity landscape, new security and privacy regulations, and the increase in the number and types of endpoint devices. The recent COVID-19 Coronavirus pandemic has exacerbated the situation as organizations scramble to adapt. Recent ESG research focused on the effects of COVID-19 on IT decision makers reveals a massive shift in work environments to the "new normal" of working from home.

Chrome Enterprise

Google Chrome Enterprise enables enterprise IT organizations to quickly deploy endpoints. Chrome Enterprise comprises the Chrome operating system, the Chrome browser, and Chrome OS laptop and tablet devices.

Google Chrome Enterprise

Chrome Browser   Chrome Operating System   Chrome Devices

Google designed Chrome OS to provide a better employee experience, while making it easy and cost-effective for IT to deploy, manage, and secure devices. Chrome OS leverages Chrome Browser as the main user interface; users launch cloud applications through Chrome and interact with data stored in the cloud, rather than the traditional Windows environment where users launch individual programs to work with data stored locally on the device. Chrome OS encrypts data at rest by default and leverages cloud-native security to protect users from threats such as malware and phishing.

Chrome Enterprise Upgrade provides the features and functionality for IT administrators to secure and remotely manage Chrome OS devices, including rapid deployment, remote disabling, ephemeral mode (all user data is purged at the end of a session), sign-in restrictions, forced reenrollment after factory reset, auto-lock, and global policy management.

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[1] Source: ESG Research Report, *2020 Technology Spending Intentions Survey*, February 2020.
[2] Source: ESG Master Survey Results, *Technology Impact of COVID-19: IT Decision Maker (ITDM) View*, May 2020.

ESG Validation Testing

ESG performed hands-on testing of Google OS device lifecycle management with a focus on the speed of deployment versus a traditional Microsoft Windows Intel (Wintel) device running the Windows 10 operating system.

Getting Started

ESG purchased two brand new Chromebook and Windows laptops during the COVID-19 work-from-home summer of 2020. The CPU, RAM, and storage specifications for the laptops were essentially identical, as shown in Table 1.

Table 1. ESG Tested Configuration

	Windows	Chrome
Model	Acer A515-54-59W2	Samsung XE930QCA-K02US
CPU	Intel Core i5-10210U	Intel Core i5-10210U
RAM	8GB	8GB
Storage	256GB SSD	256GB SSD
Firmware	Insyde V1.17	Goolge_Kohaku.12672.117.0
Operating System	Windows 10 Pro 1903 Build 18362.959	Chrome 83.0.4103.119

Device Deployment and Lifecycle Management Testing

We followed a standard enterprise initial deployment flow. We connected the Chromebook to WiFi and then enrolled in with Chrome Enterprise Upgrade, enabling remote device management. After Chrome OS automatically checked for and applied updates, we logged in as the new user and provided the required two-factor authentication for enhanced security during the initial device login. At that point, the Chromebook was ready for an enterprise user with cloud-based productivity software, including all the settings an IT administrator might have preconfigured (e.g., preinstalled apps, backgrounds, policies, and bookmarks) and all of the settings that a user may have changed on a previous device.

We performed the initial configuration of the Windows laptop, including specifying language, keyboard, and privacy settings, and connecting to the WiFi network. After Windows checked for and applied updates and rebooted, we joined the laptop to an AD domain and rebooted. Next, we downloaded and installed Microsoft Office 365, and the laptop was ready for an enterprise user with locally installed office productivity software. Windows BitLocker encryption was enabled for enhanced cyber resiliency along with the Windows Defender Antivirus utility, which is built into Windows 10 and turned on by default.[3]

> "I found it interesting how light, fast, and smooth the Chromebook deployment experience was…I was impressed."
>
> -   IT administrator

Next, we tested the elapsed time and complexity associated with redeploying an existing laptop. This set of tests began with a factory reset with the Windows reset and Chromebook Powerwash utilities. The deployment process described above was repeated with a goal of reconfiguring the device for a new user. Finally, the device lifecycle management cycle was completed with a decommissioning test that removed all user data and settings from the device.

ESG's IT administrator who has been supporting Windows devices for more than 20 years tested the laptop devices from his home office in Mendon, Massachusetts. He had this to say when asked about his first impressions, "I found it interesting how light, fast, and smooth the Chromebook deployment experience was. Is it the right fit for every enterprise? To answer that question, I would need to evaluate the application and device needs of the organization. That said, in my opinion IT managers would be remiss if they didn't give it a look and kick the tires. I was impressed."

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[3] The elapsed time for this step included turning BitLocker on, backing up the encryption key to a USB drive, and waiting for encryption to finish. Organizations that use third-party antivirus software would install the software at this time or include it in a gold image deployment process.

The quantified results of ESG's device deployment and lifecycle management testing are summarized in Table 2.

Table 2. ESG Enterprise Device Lifecycle Test Results

	Windows (mm:ss / steps)	Chrome (mm:ss / steps)	Chrome Advantage (% time / % steps)
DEPLOY			
Initial setup	06:46 / 8	02:26 / 4	64%
Updates	04:41 / 1	03:20 / N/A	29%
Join AD/Corporate enroll	01:17 / 4	00:23 / 2	50%
Install local applications (O365)	06:59 / 1	N/A	100%
Enable encryption at rest	05:58 / 5	N/A	100%
TOTAL	25:41 /19	06:09 / 6	**76% / 68%**
REDEPLOY			
Windows reset/Chrome Powerwash	15:50 /1	00:29 / 1	97%
Initial setup	06:35 / 8	01:09 / 3	83%
Updates	15:08 / 1	N/A	100%
Join AD/Corporate enroll	01:17 / 4	00:23 / 2	44%
Install local applications (O365)	06:59 / 1	N/A	100%
Enable encryption at rest	05:58 / 5	N/A	100%
TOTAL	29:24 / 14	01:32 / 5	96% / 64%
DECOMMISION			
Windows reset/ Powerwash	15:50 / 1	00:29 / 1	97%
GRAND TOTAL	45:49 / 39	08:38 / 12	92% /69%

What the numbers mean

- The elapsed time and the number of steps for each phase of device lifecycle management testing were compared for the identically configured Chromebook and Windows laptops that were purchased by ESG for this evaluation.
- Total elapsed time from power-on to ready to use was 25:41 for Windows versus 6:09 for Chromebook—**76% faster**.
- Chrome OS required **68% fewer hands-on keyboard steps** and fewer reboots for an initial deployment. Many steps can be delegated to the end-user, further simplifying and accelerating device lifecycle management.
- Redeployment and decommissioning were significantly faster and easier with Chrome (96% and 97% respectively) and one full device lifecycle (deploy/redeploy/decommission) completed 92% faster and required less than half the steps.
- The Chrome Enterprise advantage is due to several factors including a simpler deployment process with less user intervention, no reboots required during the deployment and upgrade process, no need for software updates after a Chromebook Powerwash, and a cloud-native security model with built-in encryption.

ⓘ Why This Matters

The COVID-19 pandemic is not only changing the way millions of people work, but also reshaping the entire workplace. More than half of knowledge workers who recently completed an ESG survey (57%) reported that remote work has taught them that they can do a lot of their job from home. Only 4% report that it's hard to do their job at home and, as such, would prefer to return to the office post-pandemic.[4]

ESG testing has confirmed that a Chrome OS laptop is 76% faster to deploy and 95% faster to redeploy than a Windows 10 laptop. Quicker and easier deployment saves time and money for IT organizations—especially enterprises that are supporting a growing number of work-from-home employees.

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[4] Source: ESG Research Report, *The Impact of the COVID-19 Pandemic on Remote Work, 2020 IT Spending, and Future Tech Strategies*, June 2020.

The Bigger Truth

IT organizations are facing increasing endpoint device management challenges, the result of increased IT complexity as well as the COVID-19 pandemic and concomitant shift to working from home. One-fifth of knowledge workers reported that devices were the area in which their company was least prepared to effectively facilitate the work-from-home transition.[5] From the IT decision maker perspective, employees not having the right devices, overwhelmed IT and help desk resources, and issues backing up remote employee devices have been among the biggest challenges when it comes to supporting an increased number of remote workers.[6]

ESG testing in a controlled environment demonstrated the speed and simplicity of device lifecycle management with Chrome Enterprise. A Chromebook as delivered from the factory was configured in under 7 minutes, compared with over 25 minutes for a Windows laptop (76% faster), and required approximately half the number of user intervention steps. A factory reset and redeployment of an existing laptop was 96% faster with Chrome (more than 29 minutes versus less than two minutes).

In a previously published report, ESG found that a typical mid-sized organization can reduce IT admin costs by more than 60% and lower TCO by more than $650,000 over three years with Chrome Enterprise. Simplified device lifecycle management is one of the factors that contributed to the IT efficiency advantages of Chrome Enterprise that are documented in that report.[7]

Time to Deploy

	Chrome			Windows
2:26	Out of the box setup		6:46	Out of the box setup
3:20	Update (automatic)		4:41	Update & reboot
0:23	Enroll Chrome device		0:41	Join AD & reboot
6:09	Total Elapsed Time		6:59	Local app install (O365)
	76% faster to deploy		5:58	Enable encryption
			25:41	Total Elapsed Time

The IT admin savings associated with simplified device lifecycle management can vary dramatically depending on the size of the organization and the maturity of existing processes. For example, the time savings for a small IT organization with tens to hundreds of Windows laptops that rely on O365 and that isn't responsible for managing locally installed software will be different than those for larger organizations with thousands of laptops that use the Microsoft Deployment Toolkit or other methods to automate and orchestrate device deployment. For this reason and others that are outside the scope of this report, it is important to perform planning and testing in your own environment to determine the viability and efficacy of Chrome Enterprise for your organization.

If you're looking to streamline endpoint deployment and optimize hands-on time and effort, then ESG believes that you should consider the speed and simplicity of device lifecycle management with Google Chrome Enterprise.

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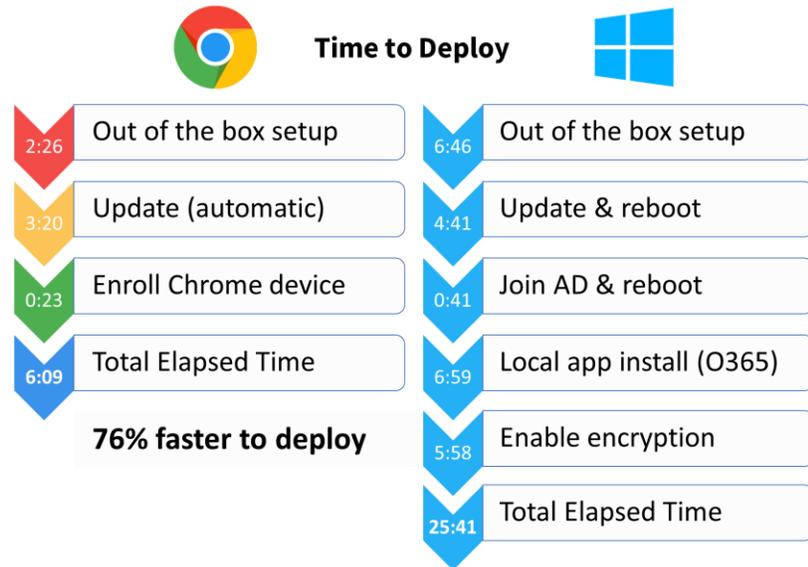
[5] Source: ESG Master Survey Results, *COVID-19 Technology Implications for Knowledge Workers*, May 2020.
[6] Source: ESG Master Survey Results, *Technology Impact of COVID-19: IT Decision Maker (ITDM) View*, May 2020.
[7] ESG Economic Value Validation, *Quantifying the Value of Google Chromebooks with Chrome Enterprise Upgrade*, June 2018.