Simplify PC management and save IT admin time with an automated support service

Our hands-on testing demonstrated Dell ProSupport Plus automation capabilities can save significant time compared to a manual approach

Management tools play an essential role in monitoring and supporting your organization's PC fleet. With a solution that helps limit hands-on time for your IT staff, you can keep administrators from getting bogged down with repetitive work, freeing them up for productivity elsewhere. Such time savings can pave the way for admins to focus on other tasks, such as providing quicker end-user support or researching new solutions for your organization.

Businesses that choose the ProSupport Plus for PCs service plan—which includes 24/7 expert client support, coverage for accidental damage, and proactive and predictive alerts[1]—may be less familiar with included automated and customizable features that IT admins can utilize. IT admins must deploy SupportAssist for Business PCs to access these features. We explored some of these additional PC management features, tracking the time it took to accomplish tasks with and without them, and calculated how much time larger organizations might save by utilizing the automated technology included with ProSupport Plus. We found that over the course of a year, using ProSupport Plus for recurring management tasks could dramatically reduce IT admin time.

Save up to 641 hours of admin time per year

On recurring tasks for a 1,000-device fleet*

Initiate device driver and firmware updates for an entire fleet

In as little as 37 seconds

vs. a manual approach, based on data extrapolated from hands-on testing

Where do these numbers come from?

We based our extrapolations on timed tests we ran on 10 Dell Latitude 5430 laptops: five with ProSupport Plus and five without it. To arrive at these estimates, we multiplied per-system task times by 1,000, factoring in the assumption that an admin would perform most tasks monthly. Results would vary based on the frequency of tasks and the size of the fleet. To read more about the test cases, deployment times, and tasks we automated with custom scripts, see page 5.

For a more detailed look at our calculations and results, see the science behind the report.

Potential time savings for a 1,000-device fleet over a year

Managing a fleet of devices is not an easy undertaking. While unpredictable issues inevitably arise, admins must also handle recurring tasks, such as ensuring devices are up-to-date and comply with security policies. Without management tools, the time an admin spends on a single device would only increase with more devices—for a large volume of devices, that time would quickly multiply.

However, in an environment with ProSupport Plus and SupportAssist, admins can automate many of these tasks and/or apply them to the entire fleet via the cloud console. Based on our testing, we predict that many of the tasks would take little to no administrator time to accomplish. As Figure 1 shows, ProSupport Plus could potentially save a 1,000-device organization 641 hours per year on recurring management tasks—that's over 80 business days!

For a more detailed look at the times and tasks included in this estimation, see page 4.

Total estimated time to complete recurring tasks (hh:mm)

(1,000-device fleet, per year, lower is better)

795:00

153:27

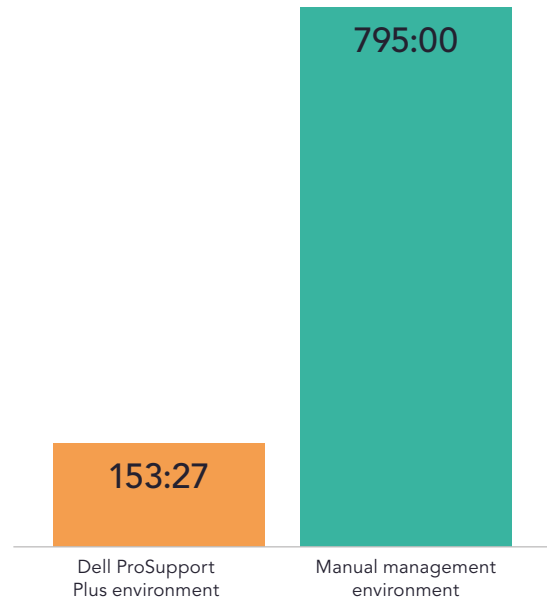Dell ProSupport Plus environment

Manual management environment

Figure 1: Estimated total times, in hours and minutes, to complete recurring tasks on a 1,000-device fleet over a year. Less time is better. Source: Principled Technologies.

As Figure 2 shows, time savings are not limited to organizations with exactly 1,000 devices. Although we expect that time savings would scale with more devices, according to our estimates with 10, 50, 250, and 500 devices, smaller fleets can also cut down on IT admin time with ProSupport Plus. To learn more about these calculations, see the science behind the report.

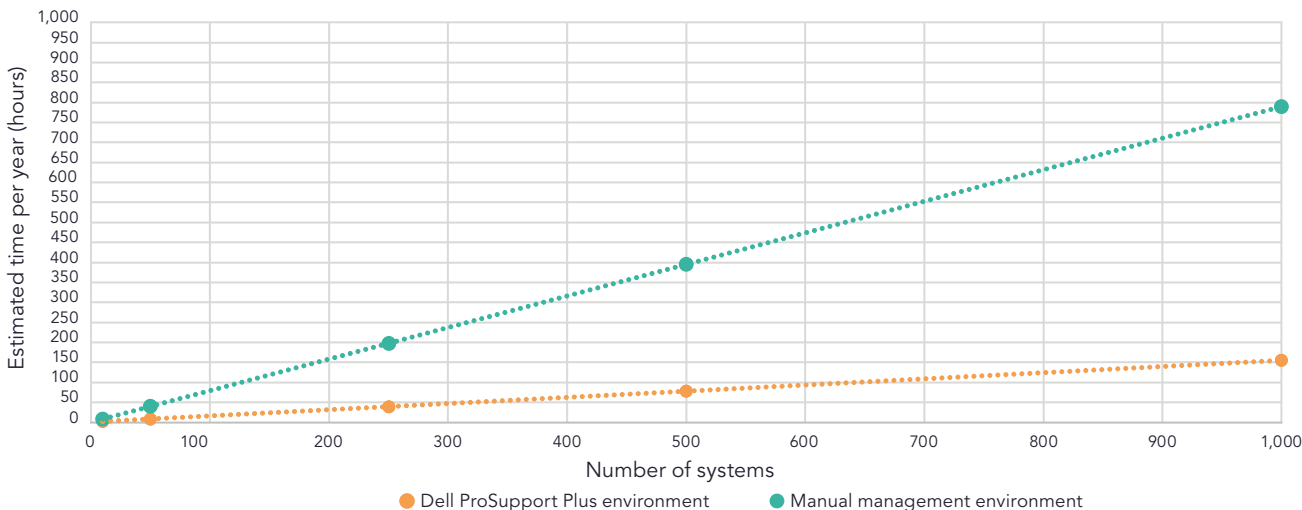**Estimated time spent on recurring tasks as the number of devices scale (lower is better)**

Figure 2: Estimated total times, in hours, to complete recurring tasks over the course of a year with varying device fleet sizes. Less time is better. Source: Principled Technologies.

While a manual approach could take IT admins over 795 hours, or 99 business days, per year to accomplish this set of recurring management tasks on a 1,000-device fleet, ProSupport Plus could cut that to a fraction of the time at just 153 hours per year. With automated, cross-fleet functions and individual system monitoring, ProSupport Plus can help businesses save IT time—for larger fleets, those time savings can be drastic.

About ProSupport Plus with SupportAssist technology

Dell SupportAssist technology collects and delivers data for ProSupport Plus management and automation features. Admins can view PC fleet telemetry and insights, as well as manage their PC fleet, within TechDirect, the Dell self-service portal. This study focuses on the capabilities admins can get when they deploy and connect to SupportAssist for Business PCs in TechDirect.
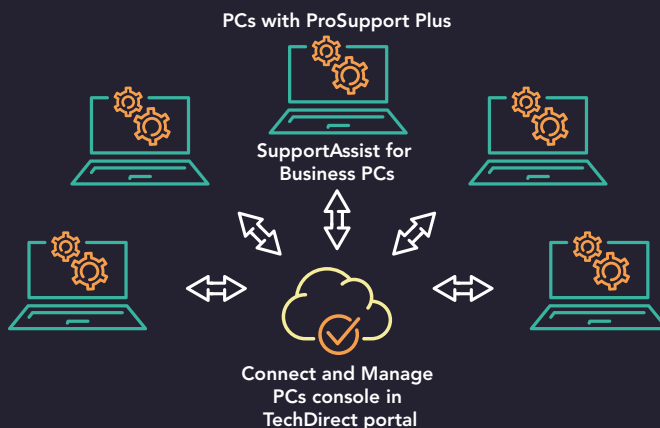

Figure 3: The relationship between ProSupport Plus, SupportAssist, and TechDirect in our testing. Source: Principled Technologies.

On page 2, we show estimated total times to complete recurring management tasks over the course of a year. Table 1 lists the tasks we included, which reflect an admin managing updates, collecting health data, and remediating non-compliant systems. To accomplish this work with ProSupport Plus with SupportAssist, an admin would periodically run on-demand scans and utilize automated features. To do similar work with a manual management approach, the admin would spend considerable time on each task, as Table 1 shows. We based these extrapolations on our hands-on testing—to learn more about our tests and the tasks we timed, see page 5.

Table 1: Estimated admin time, in hours and minutes, to complete recurring tasks on a 1,000-device fleet over a year. Less time is better. Source: Principled Technologies.

Tasks	Time for task in ProSupport Plus environment (hh:mm)	Time for task in manual management environment (hh:mm)
Running regular automated scans to gather system information and update system logic	00:00	N/A
Running on-demand scans	153:20	N/A
Starting device updates	00:07	70:00
Collecting system service contract data	00:00	01:40
Checking for out-of-date drivers	00:00	70:00
Gathering details to determine application crashes	00:00	100:00
Configuring devices with organization-specific settings*	00:00	243:20
Configuring security settings on a target endpoint*	00:00	156:40
Removing unwanted applications from a target endpoint*	00:00	153:20
Total	**153:27**	**795:00**

*Our team developed custom scripts to automate these tasks using the Rules remediation feature. After an admin uploads the script to the Connect and Manage portion of the console, it runs automatically. We therefore count it as taking no time. We anticipate an enterprise using ProSupport Plus would also develop custom scripts.

Our hands-on experience

To arrive at potential time savings for a 1,000-device fleet, we first performed testing on 10 Dell Latitude 5430 laptops—the first five with ProSupport Plus, and the other five without. When we examined recurring fleet management tasks, we found that the ability to monitor a fleet and automate tasks with ProSupport Plus could help save IT admin time. We connected using Dell SupportAssist technology and, using the Dell TechDirect console, we remotely managed the five systems with ProSupport Plus. Our admins could accomplish tasks such as driver and firmware updates by pushing those updates out to the entire fleet via agents they installed on each system.

Additionally, with built-in scanning capabilities, we saw that ProSupport Plus could deliver in-depth views into device fleets that a manual management approach can't provide. And it took our admins only minimal time—less than 15 minutes—to set up and deploy SupportAssist for Business PCs on our five-device fleet.

Comparing recurring tasks: Utilize built-in features and custom script capabilities

In our first comparison, we timed four recurring management tasks on the five devices with ProSupport Plus connected via SupportAssist and on the five devices without it. For the latter, manual approach, our admin remotely connected to each target system without automation scripts or tool assistance. We found that each of the four tasks took over 20 seconds per device. If your organization supports many devices, the time to complete these tasks with a manual approach would quickly add up.

In contrast, we found that SupportAssist for Business PCs fully automated three of these four recurring tasks, sparing IT admins from spending time or energy on them. The fourth task, initiating device updates, took less than a minute—just 37 seconds—of administrator time. For this task, the work is slightly different between the two approaches: with the ProSupport Plus approach, the administrator is scheduling the update, while with the manual approach, they are kicking off the update in that moment.

In the ProSupport Plus approach, the administrator selects the updates they want (we used the "select all" button in our testing) and clicks Update, at which point the Dell software schedules updates on all systems that require that update. The software includes all systems in the fleet by default, so administrators don't need to select specific systems. (If administrators did want to select some individual systems and exclude others, that would require more time.) We tested this on a fleet of just five devices, but for administrators applying updates to an entire fleet, initiating the update process should take the same amount of time for any number of devices. Given that a large fleet of devices will inevitably have many devices that need updates each month, being able to quickly start updates for the entire fleet is a boon for IT. With these time savings, ProSupport Plus could free up administrator bandwidth and resources for productivity elsewhere.

Because this study examines time savings from an IT administrator perspective, the timings we note for this task are exclusively the time it takes for the admin to initiate the updates; it does not include the time required for the update to install on the system. We did not test how long the installation on the system took, as the time required for installation could vary widely depending on the specific device, its network connection, and how often it syncs.

Table 2: Admin time, in minutes and seconds, to complete routine tasks in the manual approach environment and the ProSupport Plus environment. Less time is better. Source: Principled Technologies.

Tasks	Time for task in ProSupport Plus environment	Time for task in manual management environment
	For the entire fleet (mm:ss)	For each system (mm:ss)
Starting device updates	0:37	0:21
Collecting system service contract data	0:00*	0:24
Checking for out-of-date drivers	0:00*	0:21
Gathering details to determine application crashes	0:00*	0:30

*These tasks are automated, and we therefore count them as taking no admin time to complete.

IT admins could also opt to use a combination of ProSupport Plus and custom scripts to further automate processes, such as distributing compliance settings specific to your organization. In this comparison, our developers wrote scripts and ran them from the console, automatically pushing them out to the entire fleet.

In Table 3, we show the time it took to accomplish the tasks with scripts compared to completing them manually. While our scripts enabled ProSupport Plus to apply these configurations with no additional admin time, a manual approach required several minutes per device. As with the previous tasks, and as we show in Figure 2, that time would only increase with more devices. Again, these times do not account for the potential hassle and lost productivity to coordinate downtime with the end user.

Table 3: Admin time, in minutes and seconds, to complete routine configuration tasks using scripting in the ProSupport Plus environment versus manually executing the tasks. Less time is better. Source: Principled Technologies.

Tasks	Time for task in ProSupport Plus environment	Time for task in manual management environment
	For the entire fleet (mm:ss)	For each system (mm:ss)
Configuring devices with organization-specific settings	0:00*	1:13
Configuring security settings on a target endpoint	0:00*	0:47
Removing unwanted applications from a target endpoint	0:00*	0:46

*As a one-time task during deployment, our developers spent five hours of writing per script. However, no one's process is the same; times may vary in your organization. Once the admin uploads the script to the console within TechDirect, it can run automatically. We therefore count it as taking no time.

Whether IT admins are checking off expected tasks from their to-do lists or addressing issues as they surface, fleet management can be a major time commitment. Our hands-on test results indicate that with automated, cross-fleet tasks—and the ability to run scripts to further streamline processes—ProSupport Plus can significantly reduce the time it takes for admins to manage a device fleet.

Running scans: Get automated, in-depth views that streamline system checks

In addition to simplifying system management tasks, ProSupport Plus can enable admins to monitor device health and function. IT admins can run both automated and on-demand scans that check for hardware issues and collect device data. The automated scan runs periodically to identify possible issues. An admin can trigger an on-demand scan to examine user-reported issues with an individual device or to check for system updates.

As Table 4 shows, the automated scan required no admin time to run, and the on-demand scan took less than a minute to begin on an individual device.

Table 4: Admin time, in minutes and seconds, to complete scans in the ProSupport Plus environment.
Source: Principled Technologies.

Tasks	Time for task in ProSupport Plus environment
	For each system (mm:ss)
Running a regular automated scan	0:00*
Running an on-demand scan	0:46

*SupportAssist for Business PCs automatically scans all devices weekly by default—though organizations can customize this cadence—and we therefore count this task as taking no time for an admin.

Deployment: Realize management features in a matter of minutes

While saving time on recurring tasks can be a major benefit, choosing a management solution also means considering the deployment process: Are setup times prohibitive? Will the time to deploy the solution outweigh potential time savings down the line? For ProSupport Plus, we found that the answer to both is "No." In hands-on testing, it took us under 15 minutes to complete setup and deployment tasks. We signed up and configured our environment in the Connect and Manage PCs console within TechDirect, and then created a deployment package that we applied across our five-device fleet. Admins could integrate other tools to further automate the deployment process, potentially saving more time, but we installed the agent manually.

Table 5 shows each step and the length of time it took our IT admin to perform each setup task for the ProSupport Plus environment. To see how long this process might take for a larger fleet, see the science behind the report.

Table 5: Admin time, in minutes and seconds, to complete deployment tasks for the ProSupport Plus environment we tested. Source: Principled Technologies.

Tasks	Time for task in ProSupport Plus environment	
	For the entire fleet (mm:ss)	For each system (mm:ss)
Creating an account in TechDirect and completing initial sign-in	1:08	N/A
Creating the deployment package in the Connect and Manage PCs console	11:59	N/A
Installing Dell SupportAssist to each laptop	N/A	1:05

With minimal setup and deployment times, organizations could benefit from time-saving features and in-depth scans without sacrificing substantial IT resources up front.

Conclusion

Using ProSupport Plus with SupportAssist for Business PCs for management and monitoring could be a boon to both IT administrators and your organization: IT admins can experience less time stuck on repetitive tasks, and your organization can reap the benefits of freed up IT resources for focus elsewhere.

We examined several ProSupport Plus management and monitoring features, including custom scripts, automated scans, and update capabilities. For example, we found that with ProSupport Plus, we could initiate device and driver updates for a fleet in as little as 37 seconds. With these time savings, IT admins could have more time to research and optimize new technology for your business.

Extrapolating our results shows that with ProSupport Plus, your organization could see significant time savings that scale with your fleet size—as much as 641 hours of admin time per year for a 1,000-device fleet (compared to using a manual approach). With these time savings, IT admins could have more capacity to provide technical support to your employees, maintain important hardware, mentor other members of their department, and keep current on security procedures.

Management and monitoring can be a challenging job, but with minimal setup times, helpful monitoring features, and potentially significant time savings, ProSupport Plus can help alleviate the IT burden.

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1. Dell, "Support for Business PCs," accessed July 11, 2023, https://www.dell.com/en-us/dt/services/support-deployment-technologies/support-assist-for-PCs.htm.

**For more information, visit
ProSupport Suite for PCs**

The science behind the report

In this section, we list our complete results and describe the solutions on which we tested and our test methodologies.

We concluded our hands-on testing on June 28, 2023. During testing, we determined the appropriate hardware and software configurations and applied updates as they became available. The results in this report reflect configurations that we finalized on May 26, 2023 or earlier. Unavoidably, these configurations may not represent the latest versions available when this report appears.

Our results

To learn more about how we have calculated the wins in this report, go to http://facts.pt/calculating-and-highlighting-wins. Unless we state otherwise, we have followed the rules and principles we outline in that document.

We timed all tasks for ProSupport Plus and for the manual environment with one, three, and five devices.

For tasks for the entire fleet, we timed each task three times and report the median. For tasks for each system, we calculated the line of best fit using the medians from one, three, and five devices. We used that regression analysis to define a per-device coefficient for each task. Table 6 shows the time it took to complete tasks with ProSupport Plus, and Table 7 shows the time it took to complete tasks with a manual management approach. Table 8 summarizes the data in Tables 6 and 7. In the three tables, a cell containing "00:00" or "0.0" refers to an automated task, which takes no admin time to complete, while "N/A" refers to times that either do not apply to the environment or our calculations. Note that the scripted task times are estimates: While it took our developers around 5 hours of time per script, this time can differ by organization and individual.

To learn more about each task, .

Table 6: Median times, in seconds, to complete each task with ProSupport Plus.

	ProSupport Plus environment				
	Median values				Regression analysis
	For the entire fleet	One device	Three devices	Five devices	Calculated per-device time (uses line of best fit on the medians of one, three, and five devices)
Deployment tasks					
Creating an account in TechDirect and completing initial sign-in	68.7	N/A	N/A	N/A	N/A
Creating the deployment package in the Connect and Manage PCs console	719.5	N/A	N/A	N/A	N/A
Installing Dell SupportAssist for Business PCs to each laptop	N/A	61.0	178.0	336.5	65.0
Scripted tasks					
Developing and implementing the organization-specific settings script	18,000.0	N/A	N/A	N/A	N/A
Developing and implementing the security settings script	18,000.0	N/A	N/A	N/A	N/A
Developing and implementing the application removal script	18,000.0	N/A	N/A	N/A	N/A
Recurring tasks					
Running a regular automated scan	0.0	N/A	N/A	N/A	N/A
Running an on-demand scan	N/A	49.1	133.5	238.7	46.9
Starting device updates	37.3	N/A	N/A	N/A	N/A
Collecting system service contract data	0.0	N/A	N/A	N/A	N/A
Checking for out-of-date drivers	0.0	N/A	N/A	N/A	N/A
Gathering details to determine application crashes	0.0	N/A	N/A	N/A	N/A
Configuring devices with organization-specific settings	0.0	N/A	N/A	N/A	N/A
Configuring security settings on a target endpoint	0.0	N/A	N/A	N/A	N/A
Removing unwanted applications from a target endpoint	0.0	N/A	N/A	N/A	N/A

Table 7: Median times, in seconds, to complete each task with a manual approach.

Manual management environment					
	Median values				Regression analysis
	For the entire fleet	One device	Three devices	Five devices	Calculated per-device time (uses line of best fit on the medians of one, three, and five devices)
Deployment tasks					
Creating an account in TechDirect and completing initial sign-in	N/A	N/A	N/A	N/A	N/A
Creating the deployment package in the Connect and Manage PCs console	N/A	N/A	N/A	N/A	N/A
Installing Dell SupportAssist for Business PCs to each laptop	N/A	N/A	N/A	N/A	N/A
Scripted tasks					
Developing and implementing the organization-specific settings script	N/A	N/A	N/A	N/A	N/A
Developing and implementing the security settings script	N/A	N/A	N/A	N/A	N/A
Developing and implementing the application removal script	N/A	N/A	N/A	N/A	N/A
Recurring tasks					
Running a regular automated scan	N/A	N/A	N/A	N/A	N/A
Running an on-demand scan	N/A	N/A	N/A	N/A	N/A
Starting device updates	N/A	21.9	66.6	105.6	21.4
Collecting system service contract data	N/A	24.6	73.9	121.1	24.3
Checking for out-of-date drivers	N/A	20.8	64.0	104.8	21.0
Gathering details to determine application crashes	N/A	33.1	79.0	160.6	30.6
Configuring devices with organization-specific settings	N/A	76.2	219.5	365.0	73.1
Configuring security settings on a target endpoint	N/A	48.9	147.0	233.9	47.4
Removing unwanted applications from a target endpoint	N/A	43.8	125.8	239.6	46.2

Table 8: Summary of calculated times for each task, in minutes and seconds, to complete each task (truncated to the second).

	ProSupport Plus environment		Manual management environment	
	For entire fleet (mm:ss)	For each system (mm:ss)	For entire fleet (mm:ss)	For each system (mm:ss)
Deployment tasks				
Creating an account in TechDirect and completing initial sign-in	01:08	N/A	N/A	N/A
Creating the deployment package in the Connect and Manage PCs console	11:59	N/A	N/A	N/A
Installing Dell SupportAssist for Business PCs to each laptop	N/A	01:05	N/A	N/A
Total	**13:07**	**01:05**	**N/A**	**N/A**
Scripted tasks				
Developing and implementing the organization-specific settings script	300:00	N/A	N/A	N/A
Developing and implementing the security settings script	300:00	N/A	N/A	N/A
Developing and implementing the application removal script	300:00	N/A	N/A	N/A
Total	**900:00**	**N/A**	**N/A**	**N/A**
Recurring tasks				
Running a regular automated scan	00:00	00:00	N/A	N/A
Running on-demand scans	N/A	00:46	N/A	N/A
Starting device updates	00:37	N/A	N/A	00:21
Collecting system service contract data	00:00	N/A	N/A	00:24
Checking for out-of-date drivers	00:00	N/A	N/A	00:21
Gathering details to determine application crashes	00:00	N/A	N/A	00:30
Configuring devices with organization-specific settings	00:00	N/A	N/A	01:13
Configuring security settings on a target endpoint	00:00	N/A	N/A	00:47
Removing unwanted applications from a target endpoint	00:00	N/A	N/A	00:46
Total	**00:37**	**00:46**	**N/A**	**04:22**

Estimates for a 1,000-device fleet over one year

Structuring our analysis

We used the following considerations to extrapolate estimates for a 1,000-device fleet over one year:

- Repeatability: One-time tasks vs. recurring tasks
- For entire fleet vs. for each system: Whether an administrator can complete a task on all systems or just one
- Frequency: How often an administrator would complete a task in a year

We focused our analysis on recurring tasks rather than tasks that an administrator completes only once. However, we report the time to set up the entire solution below, including the estimated time to set up SupportAssist for Business PCs across 1,000 individual devices without tool assistance. We expect that most organizations will utilize some scripting to deploy the agents across their fleet.

To create our estimate, we completed the following steps:

- We performed hands-on testing (see Tables 6 through 8) and used our results as the basis of our calculations.
- For per-system tasks, we multiplied each task by the number of systems. (Note that for all fleet-wide tasks, the time per system is 0.)
- For both per-system tasks and fleet-wide tasks, we multiplied each individual task by the frequency per year that we expect that an administrator would complete that task. See Table 9 to review our assumptions.
  - We assumed a 4-year lifecycle for PC refreshes, with admins deploying a quarter of the systems each year.

Frequency table

Table 9 shows the frequency and relevant details for each task in our 1,000-device yearly estimate, and the frequency assumption shows the multipliers we used.

Here are the values we used in occurrences per year for each frequency:

- Once: 1
- Once with maintenance: 1.25
- Automated: 0
- Monthly: 12
- Once per refresh (a quarter of the PCs are replaced each year): 0.25

Table 9: Frequency and relevant details for the tasks we considered in our yearly 1,000-device estimate. Source: Principled Technologies.

	Frequency	Process on ProSupport Plus environment	Process on manual management environment
Deployment tasks			
Creating an account in TechDirect and completing initial sign-in	Once	An administrator completed this task once.	Not applicable
Creating the deployment package in the Connect and Manage PCs console	Once	An administrator completed this task once.	Not applicable
Installing Dell SupportAssist to each laptop	Once	An administrator completed this installation once on each system in the fleet.	Not applicable
Scripted tasks			
Developing and implementing the organization-specific settings script	Once with maintenance	We uploaded scripts once. We include maintenance time once every four years.	Not applicable
Developing and implementing the security settings script	Once with maintenance	See above.	Not applicable
Developing and implementing the application removal script	Once with maintenance	See above.	Not applicable

	Frequency	Process on ProSupport Plus environment	Process on manual management environment
Recurring tasks			
Running a regular automated scan	Automated weekly	No user input required	Not applicable
Running on-demand scans	Monthly	Required per-system input in console	Not applicable
Starting device updates	Monthly	This task required the administrator to kick off the task in console, but the action is completed across the entire fleet, not per system.	Connect to each system and run Windows Updates
Collecting system service contract data	Once per refresh	Automated	Record the Dell Service Tag and look up each device on the Dell website
Checking for out-of-date drivers	Monthly	Automated	Connect to each system and review Windows Updates
Gathering details to determine application crashes	Monthly	Automated	Connect to each system and collect data from event viewer
Configuring devices with organization-specific settings	Monthly	Automated via our scripts	Connect to each system and change Windows settings
Configuring security settings on a target endpoint	Monthly	Automated via our scripts	Connect to each system and change security settings
Removing unwanted applications from a target endpoint	Monthly	Automated via our scripts	Connect to each system and uninstall applications

Our extrapolated results

Finally, we generated our 1,000-device estimate for each task using the following calculations:

- 1,000 system time per year for entire fleet tasks = Task time * Number of occurrences per year
- 1,000 system time per year for each system = Task time * Number of occurrences per year * Number of systems

To arrive at the total for recurring tasks, we added the 1,000 device yearly times for each recurring task. To arrive at the total for all three task types (deployment, scripting, and recurring), we followed the same principles frequencies we outline above.

Table 10: Estimated admin time, in hours and minutes, to complete recurring tasks on a 1,000-device fleet over a year. Less time is better.

ProSupport Plus environment (hh:mm)	Manual management environment (hh:mm)	Difference (hh:mm)
153:27	795:00	641:32

Table 11: Estimated admin time, in hours and minutes, to complete all tasks we examined on a 1,000-device fleet over a year, including deployment, script development, and recurring tasks. Less time is better.

ProSupport Plus environment (hh:mm)	Manual management environment (hh:mm)	Difference (hh:mm)
190:28	795:00	604:31

Estimating other device counts

Using the same methods, we calculated times for other device counts using the same frequency assumptions. Below, we present tables and visual representations of our calculations.
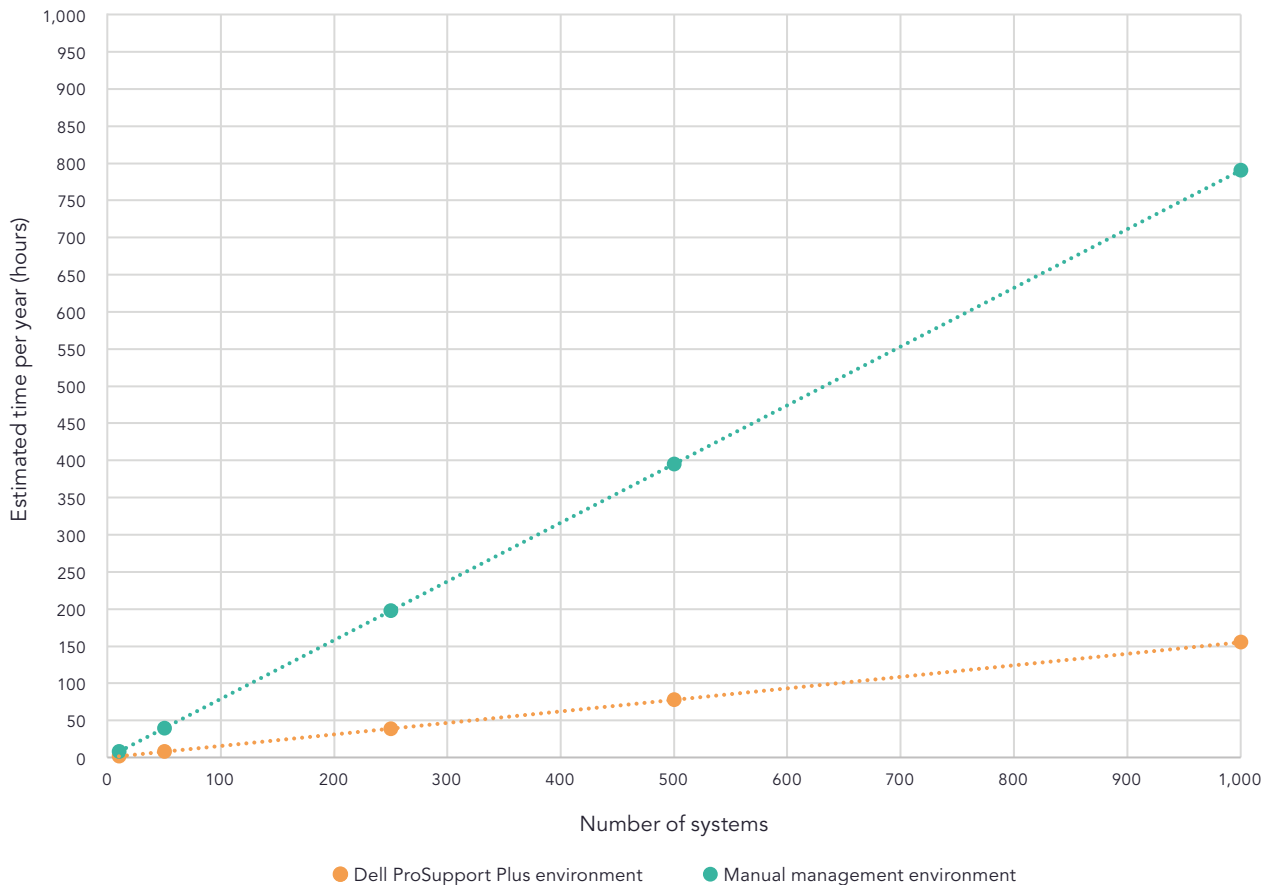
Table 12: Estimated total time, in hours and minutes, to complete recurring tasks over a year with varying fleet sizes. Less time is better.

Fleet size	ProSupport Plus environment (hh:mm)	Manual management environment (hh:mm)
10	1:39	7:57
50	7:47	39:45
250	38:27	198:45
500	76:47	397:30
1,000	153:27	795:00

Estimated time spent on recurring tasks as the number of devices scale (lower is better)

Figure 4: Estimated total time, in hours, to complete recurring tasks over a year with varying fleet sizes. Less time is better.
Source: Principled Technologies.

Table 13: Estimated total time, in hours and minutes, to complete all tasks we examined on a 1,000-device fleet over a year. Less time is better.

Fleet size	ProSupport Plus environment (hh:mm)	Manual management environment (hh:mm)
10	20:48	7:57
50	27:39	39:45
250	61:56	198:45
500	104:47	397:30
1,000	190:28	795:00

Estimated time spent on all tasks as the number of devices scale (lower is better)
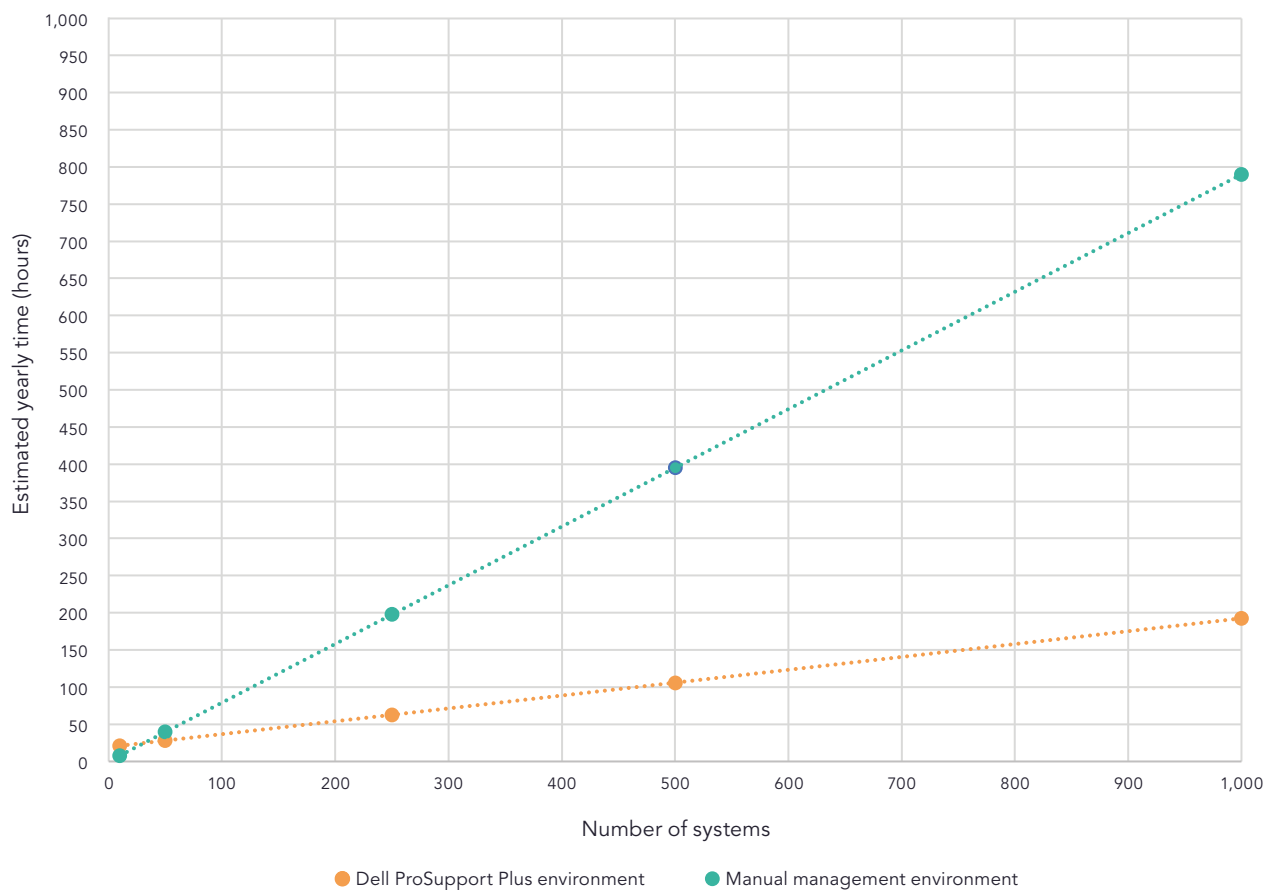
Figure 5: Estimated total time, in hours, to complete all tasks we examined on a 1,000-device fleet over a year, including deployment, script development, and recurring tasks. Source: Principled Technologies.

Details on each task

Deployment tasks

The following items are ProSupport Plus tasks only and are required to set up the ProSupport Plus environment. They are not included in the recurring times. To understand how these number affect estimations for a fleet, see Tables 10 and 11.

Creating a TechDirect Account and completing initial sign-in (ProSupport Plus environment only)

Creating this account occurs only once.

Creating the deployment package in the Connect and Manage PCs console (ProSupport Plus environment only)

For this task, we created an executable file to install the SupportAssist for Business PCs agent. The download includes the security agent (Dell Trusted Device). We used this deployment package to deploy the SupportAssist for Business PCs agent on our systems under test. Note: SupportAssist came preinstalled on all our laptops and is separate from the SupportAssist for Business PCs.

Installing SupportAssist for Business PCs to each laptop (ProSupport Plus environment only)

For this task, we manually installed the deployment package on each target machine. We did not use a tool to complete this task, though Dell gives admins the option to use a .msi installer for tool-assisted installation. After installing TechDirect, we waited two days for the device to show up in console and complete initial scans.

For frequency, this analysis includes installing the software on all 1,000 systems in one year.

Scripting tasks

ProSupport Plus scripting tasks

Our scripting tasks utilize the Remediation Rules feature of the Connect and Manage PCs console. This functionality allows us to customize our environment to implement organization settings. We include these scripts as a proof-of-concept to show what is possible using the TechDirect tool. We provide all scripts at the end of this document. All scripts run based on a schedule determined on the Connect and Manage PCs console. We used a daily schedule.

To complete this task, we developed self-signed PowerShell scripts to change settings or remove applications from our target devices. Each task included one or more detection and remediation scripts. For code simplicity, some settings are handled in different scripts. Though development time varies between teams, we estimated 5 hours of development time towards these scripts. Our team completed development in under that time. Since all scripts require changes and maintenance, we attributed an additional 25% cost to our scripting times to account for maintenance.

Each script must be signed using a certificate. In our testing we use a self-signed certificate, however other organizations would use certificates from trusted certificate authorities. Therefore, we do not report the time for installing the self-signed certificate to our endpoints.

Each of the scripting tasks corresponds with a recurring task. For the ProSupport Plus environment, no recurring action is required after uploading the script.

Scripting and implementing organization settings script

To simulate managing organization settings, our script made the following settings changes on our devices:

- Disable Personalized Ads shown in start menu
- Disable suggested content shown in start menu
- Disable advertising ID based personalization
- Enable Storage Sense

Scripting and implementing security settings script

To simulate managing security settings, our script made the following settings changes on our devices:

- Disable developer mode
- Enable virus and threat scans or Real-time Protection
- Enable Firewall

Scripting and implementing application removal script

To simulate managing a list of blacklisted applications, our script detected and removed the following applications from our devices:

- Microsoft 3D Viewer
- Microsoft MSPaint
- Microsoft Skype
- Microsoft Mail and Calendar
- Microsoft Clipchamp

Recurring tasks

For the ProSupport Plus environment, we completed all tasks from the web-based Connect and Manage PCs console in TechDirect. For the manual management environment, we completed all tasks by connecting through Remote Desktop Protocol (RDP) to each target system to complete each task one at a time.

For the ProSupport Plus environment, only the following tasks required admin input:

- Running on-demand scans
- Starting device updates

All other recurring tasks in our ProSupport Plus environment were automated.

The following tasks correspond with the scripts that we uploaded to ProSupport Plus:

- Configuring devices with organization-specific settings
- Configuring security settings on a target endpoint
- Removing unwanted applications from a target endpoint

Running a regular automated scan (ProSupport Plus environment only)

During the scheduled scan, SupportAssist gathers telemetry data to present in the Connect and Manage PCs console.

Running on-demand scans (ProSupport Plus environment only)

We include the on-demand scan because administrators will sometimes need to gather data outside of the typical weekly scan. Our analysis assumes that an administrator will complete this task once per month per system. This is not required for all environments.

Starting device updates

This task requires administrator action for both the ProSupport Plus environment and for the manual environment. For frequency, we assumed that an administrator completed this monthly, based on the update schedule on Dell's website: https://www.dell.com/support/kbdoc/en-us/000197092/dell-drivers-and-downloads-update-release-schedule.

For the ProSupport Plus environment, the administrator completes this action for the fleet at once. They select the updates they want to deploy and SupportAssist updates all devices that require those updates.

In the manual management environment, the administrator completes this task by starting the device updates in Windows Update.

Collecting system service contract data

This task is automated in the ProSupport Plus environment. In the manual management environment, the administrator completes this task by recording the service tag from the device and then checking the device's contract information on Dell's website. For frequency, this task occurs once per PC refresh.

Checking for out-of-date drivers

This task is automated in the ProSupport Plus environment. In the manual management environment, the administrator completes this task by checking the drivers that Windows Update identifies for updates. This occurs monthly based on Dell's update schedule.

Gathering details to determine application crashes

This task is automated in the ProSupport Plus environment. In the manual management environment, the administrator completes this task by remotely connecting to the target device and opening event viewer.

System configuration information

Table 14: Detailed information on the systems we tested.

System configuration information	10x Dell Latitude 5430
Processor	
Vendor	Intel®
Model number	Core™ i5-1235U
Core frequency (GHz)	1.3
Number of cores	10
Cache	12 MB L3
Memory	
Amount (GB)	8
Type	DDR4
Speed (MHz)	3,200
Integrated graphics	
Vendor	Intel
Model number	UHD Graphics
Storage	
Model	CL4-3D256-Q11
Amount (GB)	256
Type	NVMe®
Connectivity/expansion	
Wired internet	Intel Ethernet Connection 1219-LM
Wireless internet	Intel Wi-Fi 6e AX211 160 MHz
Bluetooth	4.0
USB	2x 3.0
Thunderbolt™	2x 2
Video	1x HDMI
Battery	
Type	Lithium-polymer
Size	Integrated
Rated capacity (W)	65
Display	
Size (in.)	14
Type	LED-backlit with IPS technology
Resolution	1920x1080
Touchscreen	No

System configuration information	10x Dell Latitude 5430
Operating system	
Vendor	Microsoft
Name	Windows
Build number or version	22621
BIOS	
BIOS name and version	Dell Inc 1.13.1
Dimensions	
Height (in.)	0.76
Width (in.)	12.67
Depth (in.)	8.35
Weight (lb.)	3.01

How we tested

Timing tasks in the ProSupport Plus environment

Our testing looked at two different ways of managing system fleets: one using ProSupport Plus and the other using a manual approach with no tool assistance. In the manual management environment, our administrator remotely connected to each system to complete tasks.

To manage ProSupport Plus we used the following:

- Latitude 5430 with an active ProSupport Plus entitlement
- SupportAssist for Business PCs with the security agent
- TechDirect and the Connect and Manage PCs console

The Connect and Manage PCs console is a web-accessible UI that allows us to target connected systems. Connected systems require the following:

- SupportAssist for Business PCs agent installed
- ProSupport Plus entitlement
- Internet connection

Each environment used five Latitude 5430 laptops for a total of 10 laptops. Using those PCs, we estimated the time per year saved by using ProSupport Plus management tools instead of completing the same tasks manually.

Creating an account in TechDirect and completing initial sign-in

1. Start the timer, and navigate to techdirect.dell.com.
2. Click Register at Dell.com.
3. Enter the required information, click Create Account, and verify the user's email by clicking the link from Dell.
4. Return to techdirect.dell.com, and complete the sign-in with the email you used to register your account.
5. Navigate to https://techdirect.dell.com/, and sign-in using your new account.
6. Stop the timer.

Creating the deployment package in the Connect and Manage PCs console

1. Navigate to techdirect.dell.com, and log in with the administrator account. Navigate to Manage PC Fleet.
2. Start the timer, and click Set up and connect.
3. From the Configure wizard, leave the default operating system selected, and check Include security agent (Dell Trusted Device).
4. Under General, select the following:

- Auto update SupportAssist
- Include software information in collected data
- Include identification information
- Include smart PC update recommendations

5. Under Schedule your scans and optimizations, select the following:

- Schedule your scans and optimizations
- Drivers & Downloads scan
- Weekly
- For Hardware scan:

  - Run system optimization scans
  - Leave all system optimization scans selected
  - For frequency, select Weekly

- For Run system optimization scans:

  - Clean files
  - Tune performance
  - Optimize network
  - Remove viruses & malware
  - For Frequency:

    - ◆ Weekly
    - ◆ Automatic system optimizations
    - ◆ Leave Time range (optional) unchecked
    - ◆ Leave Run scans in background unchecked

- Automatic system optimizations
- Leave defaults for User interaction (only for end-users)

6. Click Save, and click Next.
7. Click Download, and click Next.
8. From the download location, run the SuppotAssistExtratorsx64.exe tool to export the Deployment Package.
9. Under SupportAssistExtractor, run SupportAssistx64.exe.
10. In Deployment Package Manager, click Next.
11. On the Preferences screen, select Create a New Deployment, and for Group Name, type `Group01`. Click Next.
12. Click Next.
13. For Deployment Key, type `Dep1&` and click Next.
14. Select a file location of the Deployment Package, and click Next.
15. Click Finish, and stop the timer.

Installing SupportAssist for Business PCs to each laptop

1. Start the timer, and log into the first system using RDP.
2. Copy the deployment package to the system, and install the SupportAssist agent:

```
"<path_of_SupportAssistx64.exe_file>\SupportAssistx64.exe" TRANSFORMS="<path_of_mst_file>\
SupportAssistConfig.mst" DEPLOYMENTKEY="$DEPKEY1 "
```

3. When the installation completes, install the Security Agent:

```
msiexec /i "C:\Users\Administrator\Desktop\ResourceManagerv1\DellTrustedDevice\
DellTrustedDevice-5.4.164.msi" /qn
```

4. Once complete, run the following command.
5. Stop the timer when the installation completes.
6. Repeat steps 1 through 4 on all devices, recording the time for one device, three devices, and five devices.

Running on-demand scans

1. Navigate to techdirect.dell.com, log in with the administrator account, and navigate to Manage PC Fleet.
2. Start the timer, open the Connect and Manage PCs menu, and click to open the Asset Inventory.
3. For the first system, click the service tag.
4. Check to select Recommendations and Get drivers & downloads.
5. Click Run Task, and stop the timer.
6. Repeat steps 1 through 5 for all devices, recording the time for one device, three devices, and five devices.

Starting device updates

1. Navigate to techdirect.dell.com, and log in with the administrator account, and navigate to Manage PC Fleet.
2. Start the timer, and under Manage, click to select Recommendations.
3. Under Drivers and Downloads, select View Updates.
4. In the upper left, select the Select All check box.
5. Click Update, and stop the timer.

Timing tasks in the manual environment

Starting device updates

1. Start the timer, and log into the first system using RDP.
2. From the system's task bar, open Windows Update.
3. From the Windows Update setting page, click Check for updates.
4. Under Get drivers & downloads, click Run, and stop the timer.
5. Repeat steps 1 through 4 on all devices, recording the time for one device, three devices, and five devices.

Note that since updates time vary widely between device updates, we do not include the time for the scan to complete on the target device.

Collecting system service contract data

1. Start the timer, and record the Dell Service Tag number of the laptop.
2. Open a browser, and browse to https://www.dell.com/support/home/en-us?app=products.
3. Under Identify your Product, enter the Dell Service Tag of the laptop.
4. Find the Support Services expiration date. Note the date in a spreadsheet, and stop the timer.
5. Repeat steps 1 through 4 on all devices, recording the time for one device, three devices, and five devices.

Checking for out-of-date drivers

1. Start the timer, and log into the first system using RDP.
2. From the system's task bar, open Windows Update.
3. From the Windows Update setting page, click Check for updates.
4. Under Get drivers & downloads, click Run, and stop the timer.
5. Repeat steps 1 through 4 on all devices, recording the time for one device, three devices, and five devices.

Note that since updates time vary widely between device updates, we do not include the time for the scan to complete on the target device.

Gathering details to determine application crashes

1. Start the timer, and log into the first system using RDP.
2. From the Windows search bar, type `Event Viewer`, and click to open the Event Viewer.
3. From the Event Viewer, navigate to Application Logs.
4. Filter by Critical, and stop the timer.
5. Repeat steps 1 through 4 on all devices, recording the time for one device, three devices, and five devices.

Note: For this testing, our administrator browsed to the Windows Event logs but did not find, collect, or record those logs.

Configuring devices with organization-specific settings

1. Start the timer, and log into the first system using RDP.
2. From the Windows Search bar, type `Settings`, and click to open Settings.
3. Navigate to Privacy and Security, and click General.
4. Click to toggle Let apps show me personalized ads using my advertising ID to Off.
5. Click to toggle Show me suggested content in the Settings App to Off.
6. From the Settings menu, navigate to System, and click Storage.
7. Click to toggle Storage Sense to On.
8. Close the Settings window, and stop the timer.
9. Repeat steps 1 through 8 on all devices, recording the time for one device, three devices, and five devices.

Configuring devices with preferred security settings

1. Start the timer, and log into the first system using RDP.
2. From the Windows search bar, type `Developer`, and open the Developer settings.
3. From the For developers screen, toggle Developer Mode to Off.
4. From System settings, navigate to Virus & threat protection.
5. From the Virus & threat protection settings, click Manage Settings.
6. Click to toggle real-time protection to Off.
7. From the Windows search bar, type `Firewall`, and open Windows Defender Firewall.
8. In the Windows Defender Firewall menu, click Advanced Settings.
9. Click Windows Defender Firewall Properties.

10. On the Domain Profile Tab, select the On Firewall State.
11. On the Private Profile Tab, select the On Firewall State.
12. On the Public Profile Tab, select the On Firewall State.
13. Close the Settings window, and stop the timer.
14. Repeat steps 1 through 13 on all devices, recording the time for one device, three devices, and five devices.

Removing unwanted applications from a target endpoint

1. Start the timer, and log into the first system using RDP.
2. From the Windows Search bar, type `Add or remove programs`, and open Add or remove programs.
3. Uninstall the following applications:

   - 3Dviewer
   - Paint3D
   - Skype
   - Mail and Calendar
   - Clipchamp

4. Stop the timer after the last application has uninstalled.
5. Repeat steps 1 through 4 on all devices, recording the time for one device, three devices, and five devices.

Managing scripts for the ProSupport Plus environment

The following tasks are required to run scripts in the ProSupport Plus environment. The Remediation rules feature requires uploaded scripts to be signed with a certificate trusted by the target systems. This prevents untrusted scripts from running on the target system. To meet this requirement, we generated a self-signed certificate and used that certificate to sign our code. Then we exported that certificate and added it to the our target laptops' trusted certificate store. We describe both processes below.

To simplify detection and remediation, we separated some tasks into multiple scripts. We used the following scripts to manage our systems.

- Organizational settings
    - DetectionOrgSettings.ps1 & RemediationOrgSettings.ps1
- Security settings
    - DetectionSecuritySettings.ps1 & RemediationSecuritySettings.ps1
    - DetectionFirewall.ps1 & RemedaiationFirewall.ps1'
- Remove applications
    - DetectionApplications.ps1 & RemediateApplications.ps1

Generating a self-signed certificate

1. Generate a self-signed certificate using the code below, and save it to the local machine certificate stores on the developer PC (note that you will use it later to sign detection and remediation scripts):

```
$authenticode = New-SelfSignedCertificate -Subject "ATA Authenticode" -CertStoreLocation Cert:\
LocalMachine\My -Type CodeSigningCert
## Open the root certificate store for reading and writing.
 $rootStore.Open("ReadWrite")
## Add the certificate stored in the $authenticode variable.
 $rootStore.Add($authenticode)
## Close the root certificate store.
 $rootStore.Close()
```

2. From the Windows key menu, open Manage computer certs.
3. Navigate to Trusted Root Certificates → Certificates, right-click ATA Authenticode, and select All Tasks → Export.
4. In the Certificate Export Wizard, click Next.
5. Select Yes, Export the private key, and click Next.
6. Leave the default PFX option, and click Next.
7. Add a password, note it for use during the Generating a self-sign certificate section below, and click Next.
8. Select a location for SelfSignedCert.pfx, and click Next.
9. Click Finish.

Adding the certificate to each PC's personal store

1. On the target PC, remote to the target device.
2. Copy SelfSignedCert.pfx to the target system.
3. Open PowerShell as administrator, and save the certificate file to the local machine:

```
$pfxFilePath = "[Path]\SelfSignedCert.pfx"
$pfxPassword = {password}
Set-ExecutionPolicy "AllSigned"
$rootStore = [System.Security.Cryptography.X509Certificates.X509Store]::new("Root","LocalMachine")
 $rootStore.Open("ReadWrite")
 $rootStore.Add($authenticode)
 $rootStore.Close()
 $publisherStore = [System.Security.Cryptography.X509Certificates.X509Store]::new("TrustedPublisher
","LocalMachine")
 $publisherStore.Open("ReadWrite")
 $publisherStore.Add($authenticode)
 $publisherStore.Close()
```

Signing detection and remediation scripts

From the developer PC, we ran ScriptSign.ps1 to sign all scripts in our target folder. This signs all scripts with the self-signed certificate. We re-ran this script each time we made a change to the scripts.

ScriptSign.ps1

```
$targetfolder = "{target folder}\ "
$files = Get-ChildItem -Path $targetfolder
$codeCertificate = Get-ChildItem Cert:\LocalMachine\My | Where-Object {$_.Subject -eq
"CN=ATA Authenticode"}

#Sign each file in folder
foreach ($file in $files) {
    Write-Output "Signing $($file.Name)"
    Set-AuthenticodeSignature -FilePath $file.FullName -Certificate $codeCertificate -TimeStampServer
"http://timestamp.digicert.com"
}
```

Detection and remediation PowerShell scripts

We created detection and remediation PowerShell scripts to manage applications and settings using the Remediation rules feature. These managed the applications we described in Removing unwanted applications from a target endpoint section of this document, as well as the settings we described in the Configuring devices with organization-specific settings and Configuring devices with preferred security settings sections of this document. For copies of the PowerShell scripts we used, contact info@principledtechnologies.com.

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