



Set shorter backup and recovery windows for a virtual machine environment with a Dell EMC Integrated Data Protection Appliance solution

The Dell EMC solution backed up and recovered VMs in a heterogeneous environment faster than a similarly sized solution from a competitor

Ensuring business continuity for a growing virtual infrastructure requires a fast data protection solution that can back up and restore virtual machines (VMs) as quickly as possible. Choosing a Dell EMC™ Integrated Data Protection Appliance (IDPA) DP8800-based solution for your data protection needs allows you to set shorter backup and recovery windows, which could give you more time for business operations.

At Principled Technologies, we backed up and recovered VMs with a Dell EMC Integrated Data Protection Appliance DP8800-based data protection solution and a similarly sized solution from a key competitor (which we refer to as "Vendor Z" in this report). We scaled backups from zero to 1,000 VMs over 10 days (i.e., adding 100 new VMs in each day's backup window) and then backed up all 1,000 VMs each day for four additional days. For our recovery scenario, we tested the instant-access restore capabilities of both solutions with only 10 VMs.

The Dell EMC IDPA solution backed up and recovered the VMs faster than the Vendor Z solution. Faster backups and recoveries can help reduce the risks of losing revenue and violating service-level agreements (SLA), minimize interruptions to critical business operations, and give users more uptime for accessing critical applications and data.



Shorter backup windows for production VMs

21% less time to complete 14 simulated days of VM environment backups



Less downtime from data loss or corruption

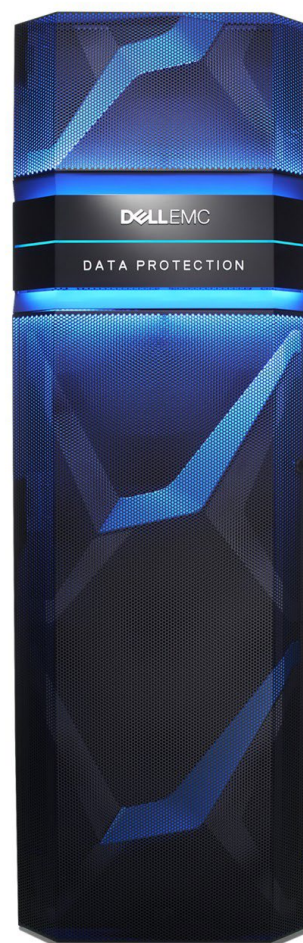
12X faster average quick VM recovery

How smaller backup and recovery windows help your organization

Time is critical for backups and recovery. Smaller backup and recovery windows benefit your users, and thus help your organization. Users depend on data and applications being available to continue their activities and maintain operations.

IT departments set windows of time to back up critical applications and data. They often schedule these windows during periods of low application usage outside of normal business hours. For companies whose user base and operating hours extend across multiple time zones, however, longer backup windows can interfere with application usage and response times. The less time your data protection infrastructure takes to back up data, the better.

When it becomes necessary to recover data from these backups, every extra minute threatens organizational continuity and increases downtime that can cause lost sales and revenue. If a data set becomes corrupt during normal business hours, for example, IT staff must restore the most recent backup (again, likely performed during a low application usage time and before the corruption) so that applications can resume normal activity. The less time it takes to recover data, the sooner your employees, partners, and clients can regain access to your data and applications and experience the level of performance to which they're accustomed.



Dell EMC IDPA DP8800 solution

Image provided by Dell

About the IDPA solution we tested

According to Dell, IDPA is a converged appliance that “offers complete backup, replication, recovery, deduplication, instant access and restore, search & analytics, seamless VMware integration—plus, cloud readiness with disaster recovery (DR) and long-term retention (LTR) to the cloud—all in a single appliance.”¹

The central component of the Dell EMC solution we tested was the IDPA DP8800, a data protection appliance powered by Intel® Xeon® processors and featuring up to 1 petabyte (PB) of usable active tier storage capacity. The appliance integrates with VMware technology and offers flexibility in the form of many plug-ins and software features that allow organizations to customize backup and recovery capabilities of their data protection environment.

For more information on the Dell EMC IDPA DP8800, see <https://www.delltechnologies.com/en-us/data-protection/idpa/integrated-data-protection-appliance-dp8800.htm>.

Decrease backup times as virtualized environments grow

A faster backup process can help maintain operational continuity and mitigate risk. Faster backups also allow your organization to set shorter recovery point objectives (RPOs). RPOs are agreed-upon points in time to which IT staff should be able to recover data from a backup (e.g., four hours prior to a malware attack). Shorter RPOs mean being able to recover data closer to the event.

In our data center, we simulated 14 days of backing up a virtualized environment, scaling the number of VMs over the first 10 days. Some VMs were running Microsoft Windows Server, and others were running Linux. A subset of the VMs ran Microsoft SQL Server.

On day 1, we backed up 100 VMs. Each day on days 2 through 10, we added 100 VMs to the existing backup routine. For example, on day 6 we backed up 100 new VMs in addition to the 500 existing VMs. We stopped adding new VMs after day 10, so we backed up 1,000 VMs on both solutions on days 10 through 14.

Figure 1 shows that the IDPA solution saved more than 6 hours of total backup time for the VM environment. That means that an organization with an IDPA solution could see smaller backup windows each week compared to an organization with the Vendor Z solution. In addition, completing backups in less time could mean IT staff have more flexibility in their schedules to perform other tasks, including backing up additional VMs.

Figure 2 shows that on average, the IDPA solution saved 40 minutes backing up the VM environment each of the final four days of testing. We considered these “steady state” backups because we did not add new VMs to the backups these days. Spending less time on average to back up VMs allows your IT teams to set shorter backup windows.

In this section, we use bar charts to represent the amount of time the solutions needed to perform backups. Because the total and average times vary, we use two different scales in Figures 1 and 2.

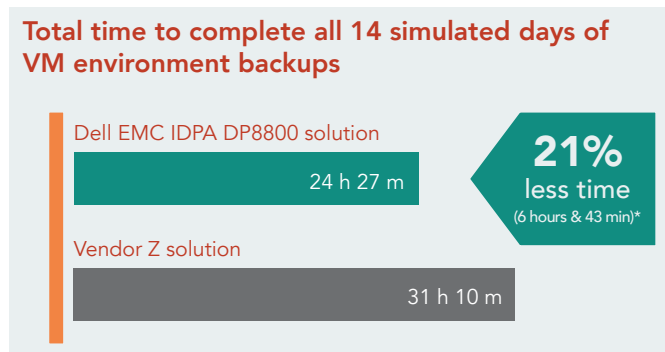


Figure 1: The time in hours and minutes each solution needed to back up the VM environment for all simulated days. Lower is better. Source: Principled Technologies.

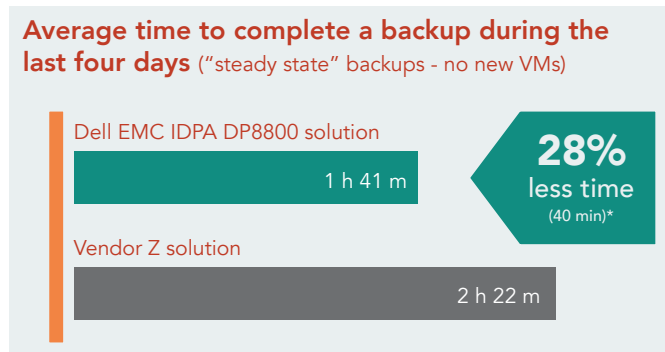


Figure 2: The average time in hours and minutes each solution needed to back up the VM environment during the last four days of testing when we did not add new VMs. Lower is better. Source: Principled Technologies.

*For brevity, we have rounded all times down to the minute after calculating the differences.



Save space for future backups

During our backup testing, we also measured how much storage the two solutions consumed while backing up the VMs. Consuming less physical space for backups could help your organization reduce storage CapEx over time—the more efficiently your backup storage solution uses space, the less need your organization could have to purchase future backup storage solution capacities.

As Figure 3 shows, the backups with the IDPA solution consumed less physical space each simulated day of our testing than those of Vendor Z. As testing progressed over the 14-simulated-day period, backups with the Vendor Z solution consumed increasingly more physical space than the IDPA solution did. The difference between the two backups on the first simulated day of testing was almost 1 terabyte (TB), and on the last day of testing, the difference was 6.44 TB.

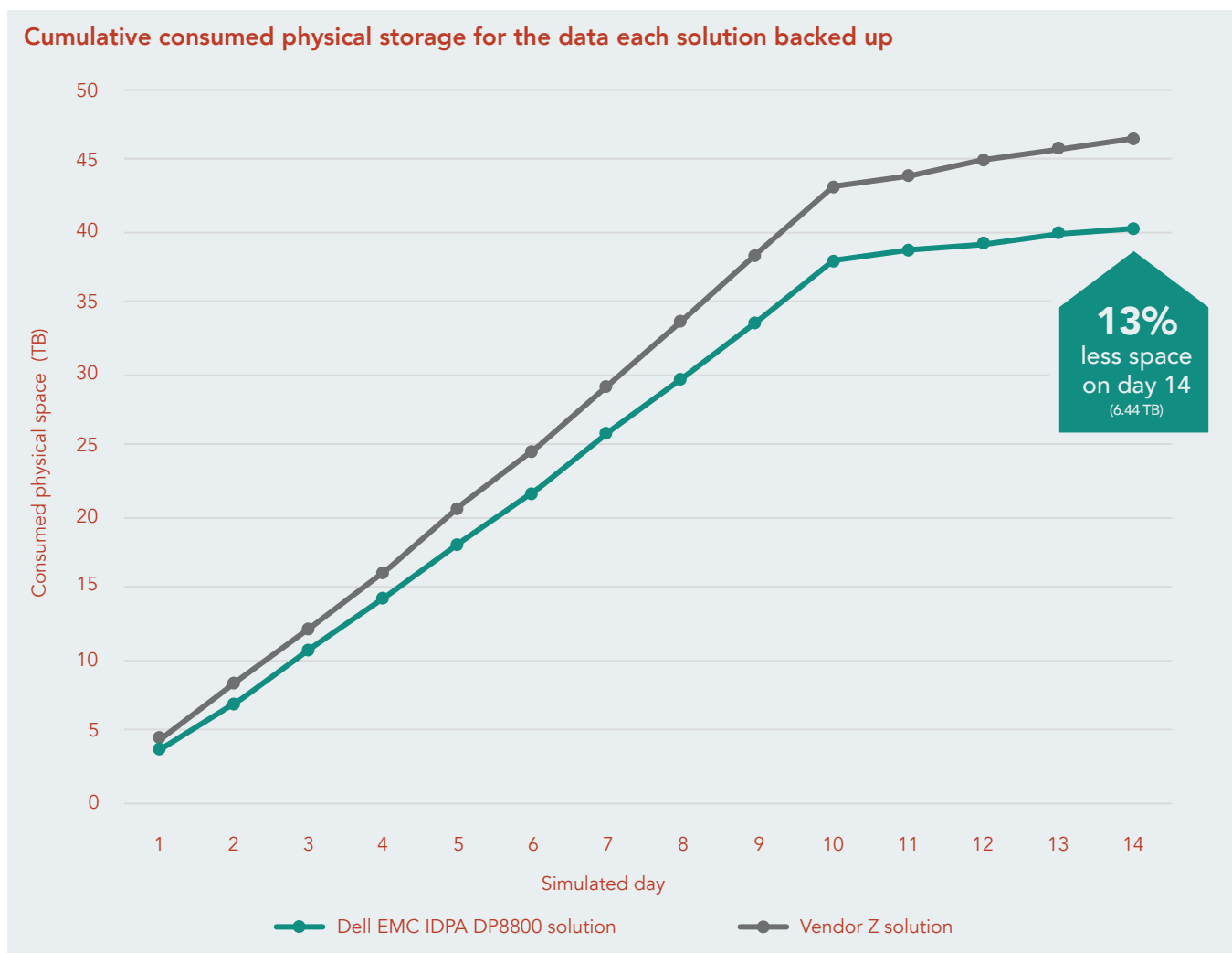


Figure 3: The amount (in TB) of physical storage each solution consumed on each simulated day of testing. Lower is better. Source: Principled Technologies.

Another way to look at the physical space consumption of the two solutions is to consider the rate of growth for the daily backups. The required physical space for each solution's backup grew daily because we added 100 VMs on each of the first 10 simulated days. At day 11, we stopped adding VMs, resulting in a drop in daily growth for each backup. As Figure 4 shows, Vendor Z required more physical space to store the same backup each day.

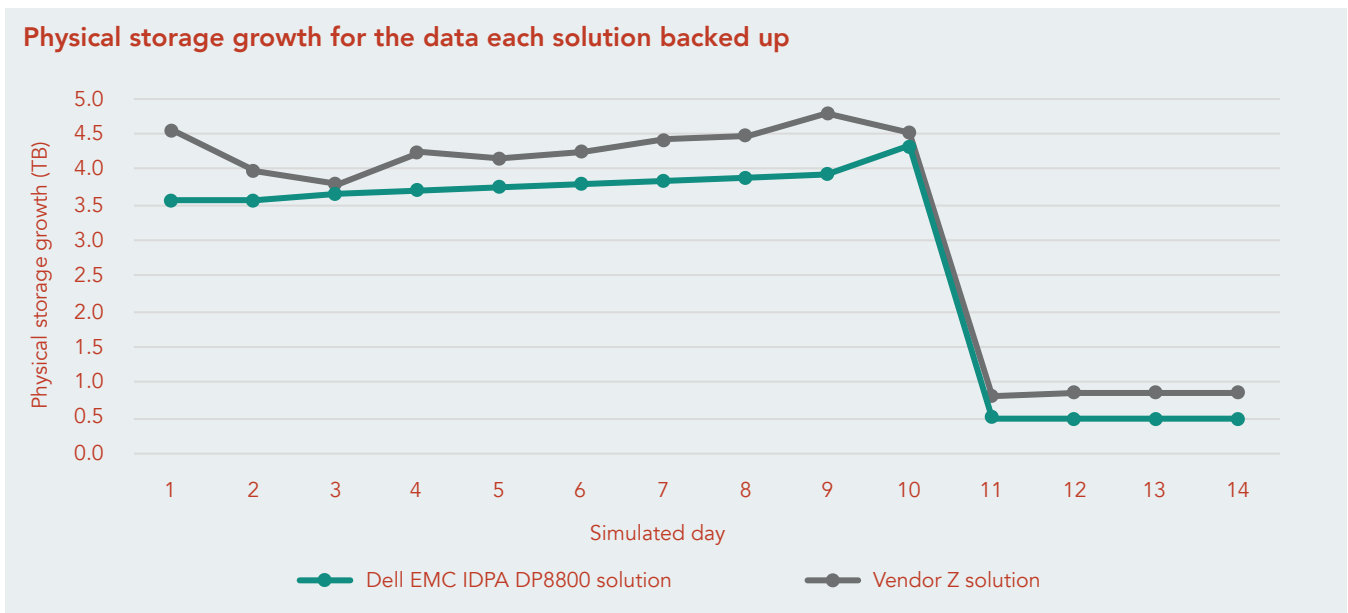


Figure 4: The average daily backup growth (in TB) for each solution. Lower is better. Source: Principled Technologies.

Shorten recovery time for VMs

Data corruption, ransomware, or a natural disaster can halt your organization's productivity by taking down applications, destroying data, and prohibiting users from working. Having a faster data recovery solution in place could allow you to restore affected applications sooner. Faster data recovery also helps your IT department set shorter recovery time objectives (RTOs), the periods of time in which an organization should recover an application after an event. Shorter RTOs mean faster recovery, less downtime, and greater ease in meeting SLAs.

We used each solution's "instant access"² restore feature to recover VMs. For the IDPA solution, Instant Access is a feature that allows admins to boot a VM from the appliance. The Vendor Z solution offered a similar feature. We found that the IDPA solution can provide instant access to more VMs simultaneously (we tested only up to 20) than the Vendor Z solution, which supported only 10 concurrently active VMs for instant access recovery.

We also found that on average, the IDPA solution performed instant-access restores of the VMs up to 12 times faster than the Vendor Z solution. Figure 5 shows the average time to perform a single instant access restore during our 10-VM recovery scenario. Faster recovery allows usage levels of your services and applications to return to a pre-event state more quickly, which reduces downtime and mitigates revenue loss.

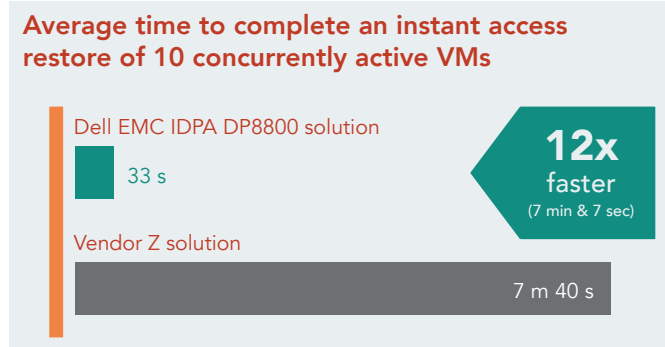
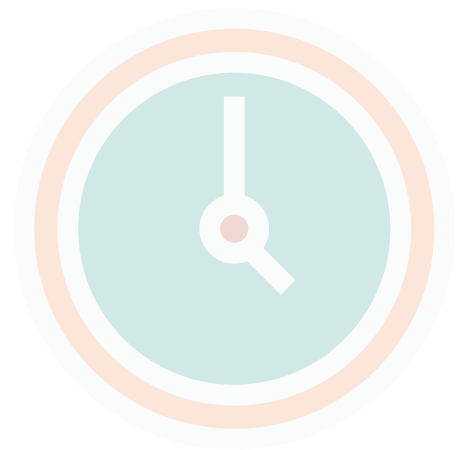


Figure 5: The average time in minutes and seconds that each solution needed to complete an instant-access restore of 10 concurrently active VMs. Lower is better. Source: Principled Technologies.





Conclusion

Expanding applications and services to grow your organization means you have more data to back up and recover when necessary. Compared to a competing solution from Vendor Z, a Dell EMC IDPA DP8800-based data protection solution delivered faster backup and recovery times in a VM environment. For the total backup testing period, the IDPA solution saved more than 6 hours compared to the Vendor Z solution, and the IDPA solution needed 28 percent less time on average to complete backups without new VMs versus the competitor. We also found that on average, the IDPA solution performed instant access restores of VMs up to 12 times faster than the Vendor Z solution. By choosing an IDPA DP8800 solution for data protection, your organization can set shorter backup and recovery windows, which could minimize disruptions to application performance and user access, help you meet SLAs, and keep your organization's daily operations on track.

- 1 Dell EMC, "DELL EMC INTEGRATED DATA PROTECTION APPLIANCE (IDPA)," accessed January 27, 2021, <https://www.delltechnologies.com/en-rw/collaterals/unauth/data-sheets/solutions/h16033-integrated-data-protection-appliance-ds.pdf>.
- 2 The Dell solution and Vendor Z both have a recovery feature they call "instant." These features take less time than full target restores and are meant to deliver quick access to VMs.

Read the science behind this report at <http://facts.pt/fDdG1LB> ►



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