Technical Research Report

Testing the Value of Dell™ PowerEdge™ R770 Servers with Preinstalled Windows Server® 2025

Prowess Consulting examines the value of Dell PowerEdge R770 servers with a preinstalled Windows Server 2025 OEM license compared to separately purchasing and manually installing a Windows Server 2025 volume license.

Executive Summary

Today's small and medium-sized businesses (SMBs) face some oversized challenges to staying agile and competitive. They need to modernize their infrastructures so they can react to changing markets, meet regulatory compliance requirements, safeguard against cyber threats, and improve operational efficiency. And they need to accomplish all these goals with extremely tight budgets and limited IT staff.

One cost-effective modernization approach involves standardizing an organization's server environment with preinstalled Windows Server® 2025 OEM licensing. The latest release of Windows Server comes with automated security capabilities, such as hotpatching, which help boost security without requiring special expertise or manual intervention.

OEM licensing costs less per server, streamlines procurement processes, reduces manual intervention, and accelerates server deployment compared to traditional licensing. The multiple cost, time, and labor savings add up to significant reductions in capital expenditures (CapEx) and operating expenses (OpEx).

To help illustrate these benefits for SMBs, Prowess Consulting conducted a study sponsored by Dell Technologies to investigate Windows Server 2025 OEM licensing preinstalled on Dell™ PowerEdge™ R770 servers. We also wanted to explore the value of OEM licensing, so we compared two types of server deployments: a preinstalled OEM license and a manually installed comparable volume license.

Our test results revealed that the preinstalled Windows Server 2025 OEM license delivered superior ease of installation, time to deployment, and total cost of ownership (TCO). A preinstalled Windows Server 2025 OEM license requires up to 71 fewer process steps for server deployment than a manual installation of Windows Server 2025 (that is, volume licensing). This streamlining means you can deploy servers faster, reducing deployment time by up to 62% compared to manual installation. Windows Server 2025 OEM licensing also costs up to 40% less than comparable Windows Server volume licensing. In addition, the OEM licensing we examined includes a technical support package that offers significant time- and labor-savings benefits for organizations with limited IT expertise and resources.

Highlights

Windows Server® 2025 delivers:

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Compared to manually installing a volume license, OEM licensing preinstalled on Dell™ PowerEdge™ R770 servers delivers up to:

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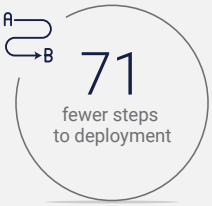

The Modern Security Challenge for SMBs

If your organization is subject to information privacy and data security regulations—such as in healthcare, banking, insurance, retail, government, education, and others—you must implement measures to protect your data and ensure compliance. Your organization needs to deal with bad actors using AI to build sophisticated attack strategies in the hope of sneaking past your threat detection processes and holding your data for ransom. These regulations and threats are driving organizations to adopt zero-trust security models that help boost data security and risk mitigation.

SMBs are particularly vulnerable targets for a number of reasons, including a lack of resources and expertise to defend against complex attacks. Some attackers deliberately target SMBs to fly under the radar: as one hacker put it, "It is better to quietly receive stable small sums from mid-sized companies, only occasionally entering [enterprise] corporations such as Olympus."[1]

Whatever the reasons, the percentage of cyberattacks targeting SMBs continues to rise. Verizon's 2020 Data Breach Investigations Report (DBIR) noted that the number of data breaches experienced by small organizations (those with less than 1,000 employees) was less than half that of large organizations.[2] Just four years later, the latest Verizon DBIR observed no significant difference in breach numbers between small and large companies.[3]

A security breach can result in catastrophic damages from lost revenue, financial penalties, damaged reputation, and diminished customer trust. Verizon estimates the median cost of a business email compromise (BEC), such as spoofing, phishing, or malware infections, is $50,000 per successful breach. According to the insurance company Coalition, the average cost of a claim in 2022 was $139,000, a potentially crippling amount for an uninsured small business.[4]

Penalties for regulatory non-compliance can be similarly devastating to an SMB because they are not adjusted for business size. Fines issued under the General Data Protection Regulation (GDPR) law can reach up to €20 million or 4% of an organization's annual revenue, whichever is higher. Violations of the California Consumer Privacy Act (CCPA) can result in penalties of up to US $7,500 per violation.[5]

Get Security Out of the Box by Default

Under ever-mounting pressure from the myriad devastating threats to their business continuity, financial solvency, and customer trust, SMBs have never had a greater need for an affordable, multilayered security solution. To help SMBs find a cost-efficient strategy for adopting zero-trust security, Prowess Consulting investigated a deployment of Windows Server 2025 in Dell PowerEdge R770 servers. We looked at some of the new security features involved in such a deployment, which we found could be particularly valuable to SMBs.

A preinstalled Windows Server 2025 environment is secure by default, easing your pathway to zero trust adoption. The default settings reduce the number of manual tasks for configuring settings, troubleshooting alerts, and monitoring user access. The latest Window Server 2025 release is enhanced with automated security management and threat response mechanisms. Windows Defender for Endpoint now includes AI-driven threat detection. Logging and auditing capabilities can help your organization meet your industry's regulatory compliance requirements.

Windows Server 2025 introduces support for Microsoft Azure® Arc–enabled hotpatching, a preventative defense capability that is particularly valuable for organizations with limited IT staff and resources. Hotpatching automatically installs security updates with near zero downtime, proactively keeping your security current against emerging threats with minimal staff intervention and without having to purchase third-party security add-ons. Hotpatching updates server environments almost as soon as a patch is released, helping shrink attack exposure windows.

With a Windows Server 2025 OEM preinstalled license in a PowerEdge R770 server, you benefit from a Dell Technologies and Microsoft collaboration that offers a single source of expert security knowledge and support. This means unified support for hardware and software, saving IT teams from having to hunt for answers across multiple communities and knowledgebases.

Choose Multi-Layered Protection Rooted in Hardware

To get optimal value from your Windows Server 2025 deployment, we recommend choosing secured-core servers that meet Microsoft's stringent security requirements. We selected the Dell PowerEdge R770 server for our testing because it meets these requirements with multi-layered security that is rooted in hardware and is certified for Windows Server 2025.[6] A hardware root of trust is a secured-core hardware capability that sets the foundation of your zero-trust environment. This silicon-based mechanism verifies system integrity from the moment of bootup.

Active Directory® has been enhanced with credential and identity protections that include hardware-based isolation environments, multi-factor authentication (MFA), authentication keys, and role-based access controls (RBAC). Enhanced encryption, such as with Trusted Platform Module (TPM) 2.0 and Microsoft Pluton® security processor, is integrated into chipsets to help protect data in transit and at rest. Software-defined networking and micro-segmentation help prevent attacks from propagating laterally.

For virtualized environments, Windows Server 2025 introduces security enhancements for Hyper-V®, including hypervisor-protected code integrity (HVCI). HVCI ensures that only trusted code is executed. Virtualization-based security (VBS) separates memory into isolated regions. The PowerEdge R770 server provides a hardened root of trust, meaning memory isolation is enforced even if the operating kernel is compromised. Hyper-V isolation for containers enables multiple, isolated container instances to run concurrently on a host. Each container operates inside a hardware-based virtual machine (VM) with its own kernel.

Adopt a Future-Ready Infrastructure

A modernized infrastructure, one that is AI-ready and seamlessly connected from edge to cloud, can help organizations be competitive. It enables them to adapt to changing demands, improve operational efficiency, and achieve long-term success. However, this modernization can be challenging to implement for organizations with limited resources and expertise. Our analysis indicates the Dell Technologies and Microsoft solution can help SMBs cost-effectively modernize their data infrastructures with advanced AI, performance, and scalability.

Windows Server 2025 and the PowerEdge R770 server are collaboratively optimized to support demanding AI and machine learning (ML) workloads. The latest version of Windows Server easily connects to Azure Arc, which is required to enable security hotpatching. Azure Arc management also enables IT teams to deploy infrastructure seamlessly across edge, hybrid, and multicloud environments. Enhanced container management enables IT teams to streamline application development and deployment.

Performance enhancements include the new GPU partitioning feature, which adaptively boosts resource allocation for applications that require heavy parallel processing, including virtualized applications. The partitioning supports live migration and failover clustering for optimal system uptime and availability.

Windows Server 2025 also includes operational efficiency improvements. Windows Update® now delivers operating system (OS) upgrades faster than for Windows Server 2022. Virtualization scalability includes support for VMs with up to 240 TB RAM and up to 2,048 virtual CPUs (vCPUs) per VM. Container image size has been reduced, speeding up container transfers and downloads and improving storage efficiency. Storage capacity gets optimized with data deduplication and compression using the Resilient File System (ReFS®).

Particularly important for SMBs, enabling these modernization and efficiency capabilities requires minimal expertise, and Dell Technologies and Microsoft tech support is readily available for assistance.

Accelerate Server Deployment Time

Today more than ever, SMBs need rapid server deployment that helps them lower time to value and respond quickly to market changes. Traditional deployment of a server running Windows Server requires manual installation, which involves time-consuming and complex setup tasks. Manual installation carries a high risk of configuration errors, which can lead to extended system downtime and service disruptions. A preinstalled OEM license automates and simplifies server deployment, reducing the number of manual installation steps needed. This means IT teams can get services up and running quickly and with greater confidence that they are configured correctly.

To measure server deployment, Prowess Consulting's engineers performed the six actions listed below to install the volume license; for the OEM license, installation involved only steps 4, 5, and 6:

1. Access BIOS and Integrated Dell™ Remote Access Controller (iDRAC) to confirm initial network settings.
2. Use iDRAC to configure a RAID 1 volume for the OS installation.
3. Install Windows Server 2025 Datacenter Evaluation via virtually connected media.
4. Perform a final reboot to complete the Windows Server installation and configure Windows Server passwords.
5. Conduct the first login to the Windows Server environment.
6. Connect Windows Server to Azure Arc and enable hotpatching.

We measured server deployment in two ways: the total time required and the number of steps required. Our test results revealed a time savings of up to 32 minutes and 30 seconds per server, or up to 62% less time needed to deploy the server with preinstalled Windows Server 2025, compared to manual installation. The preinstalled Windows Server 2025 environment took 71 fewer steps to deploy with hotpatching enabled than manual installation—with 36 steps needed for a preinstalled configuration compared to 107 steps for manual installation. See Figure 1, Figure 2, and Table 1 for test results.

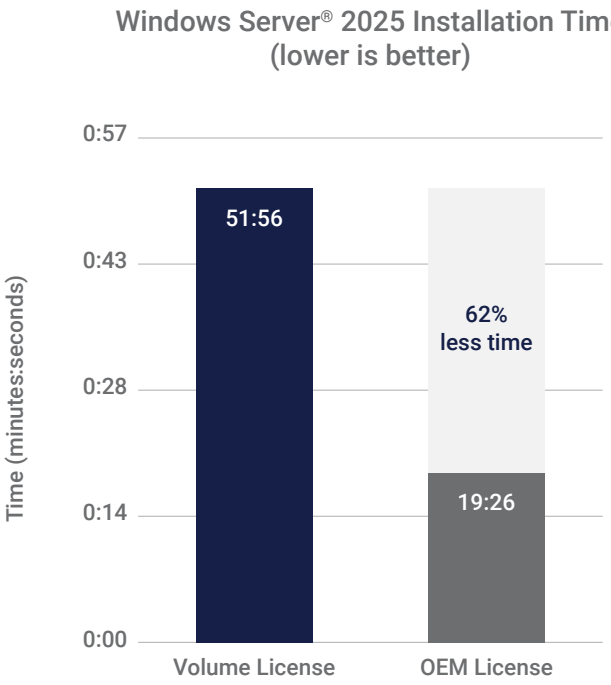

Figure 1 | Manual installation versus preinstalled length of time

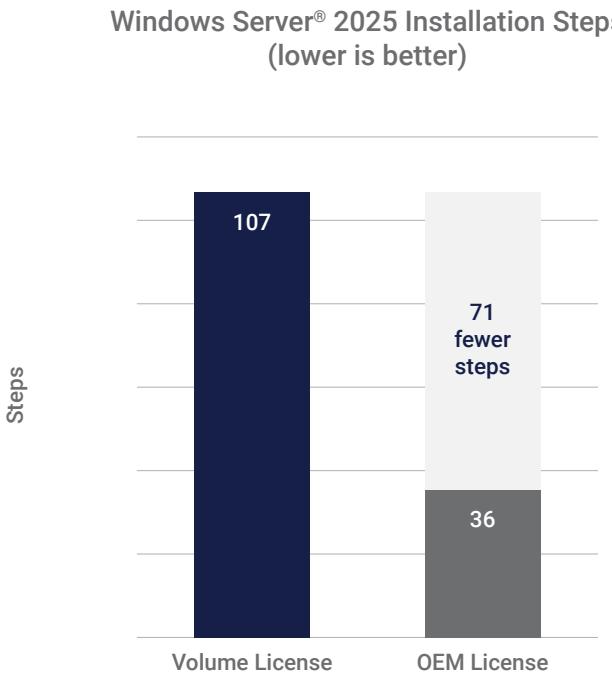

Figure 2 | Manual installation versus preinstalled number of steps

Table 1 | Time and steps required to deploy one server with hotpatching enabled*

Dell™ Server and Windows Server® 2025 License	Length of Time	Number of Steps
Dell™ PowerEdge™ R770 server with preinstalled Windows Server 2025 OEM license	19 minutes, 26 seconds	36 steps
PowerEdge R770 server with manually installed Windows Server 2025 volume license	51 minutes, 56 seconds	107 steps
Calculated savings	32 minutes, 30 seconds	71 steps

*Hotpatching enablement was the same for both installations: length of time = 15:33 and number of steps = 30.

Arturo and Maya: A Tale of Two Administrators

To help illustrate the best and the worst of two real-world deployment scenarios, we created two IT administrator characters, Arturo and Maya. Arturo and Maya work at small companies (approximately 150 employees each) with similar IT infrastructures. Both administrators have been assigned the task of deploying 10 new application servers using Windows Server 2025. Following deployment, they will connect the Azure Arc management service to enable hotpatching.

Arturo deploys 10 PowerEdge R770 servers that need Windows Server 2025 volume licenses to be installed manually. He begins with several preinstallation tasks: obtaining licenses, downloading software, and creating installation media. Next, he configures, installs, and deploys Windows Server 2025, checking for error alerts as he goes. Arturo's total deployment time is 8 hours, 39 minutes, and 20 seconds (10 servers x 51 minutes and 56 seconds).

Maya, meanwhile, deploys 10 PowerEdge R770 servers with preinstalled Windows Server 2025 OEM licenses. Because Windows Server 2025 is preinstalled, she skips the preinstallation, configuration, and installation steps and goes straight to server deployment. Maya finishes her deployment in 3 hours, 14 minutes, and 20 seconds (10 servers x 19 minutes and 26 seconds). She is rewarded with a time savings of approximately 5 hours and 25 minutes, which she uses to complete other critical IT tasks.

Arturo
Volume license manually installed

Deployment time = 8 hours, 39 minutes, and 20 seconds

- License purchase
- Software downloads
- Installation media creation
- Software installation and configuration
- Error-checking and resolution
- Server deployment
- Azure Arc login and hotpatching enablement

Maya
OEM license preinstalled

Deployment time = 3 hours, 14 minutes, and 20 seconds

- Server deployment
- Azure Arc login and hotpatching enablement

Time saved compared to volume licensing = 5 hours, 25 minutes

Use OEM Licensing to Lower TCO

As software licensing costs continue to rise, IT departments face increasing pressure to find cost-effective solutions that will not compromise performance and security. One cost-saving approach we recommend is purchasing server hardware that comes bundled with a preinstalled OEM software licenses at the time of purchase. Compared to traditional licensing that is purchased separately and installed manually, a preinstalled OEM license not only delivers upfront cost savings but also significant time and labor savings.

Lower software licensing costs help reduce the TCO for Windows Server deployments. And these savings can be used to optimize IT budgets and productivity. You can reallocate IT resources to improve security or expand services. Upgraded servers can streamline infrastructure management and boost operational efficiency.

To estimate the possible upfront savings from purchasing a preinstalled OEM license, we compared pricing for a Windows Server 2025 OEM license with a comparable volume license for the PowerEdge R770 server. A preinstalled OEM license costs US $1,272 per server, compared to US $2,120 per server for the volume license, representing a 40% savings in licensing costs per server (see Figure 3 and Table 2).[7]

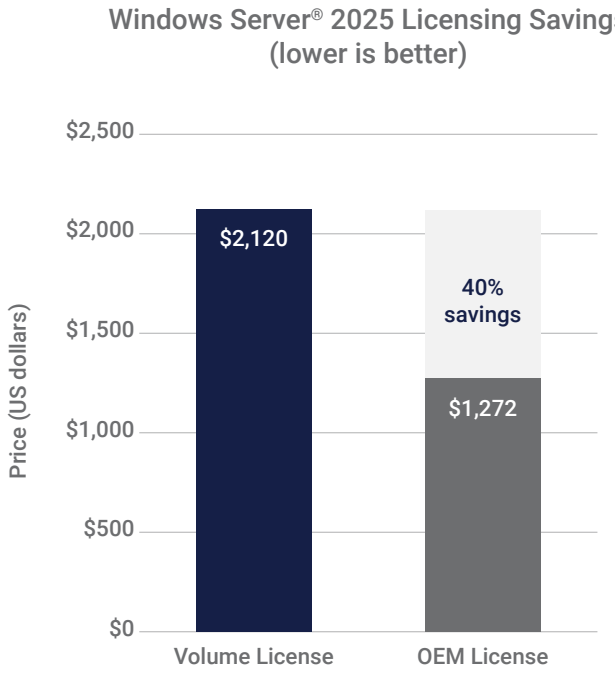

Figure 3 | OEM versus volume licensing costs for Windows Server® 2025

Table 2 | Comparison of licensing costs per server

Windows Server® 2025 License for Dell™ PowerEdge™ R770 Servers	Price per Server
Windows Server 2025 OEM license preinstalled	US $1,272
Windows Server 2025 volume license purchased separately	US $2,120
Calculated savings for preinstalled versus volume licensing	US $848 40% savings

In addition to upfront cost savings, OEM licensing helps lower TCO with procurement streamlining. The one-time purchase of bundled hardware and software simplifies accounting and purchasing. No additional purchases are needed for third-party software or supplemental installation media.

Arturo and Maya: Deployment Costs

In the previous section, we saw how much deployment time Maya saves with a preinstalled OEM license. Here, we see how deployment costs stack up when we add licensing and labor into the mix.

Arturo purchases 10 PowerEdge R770 servers without preinstalled software. He spends approximately US $21,200 on Windows Server 2025 Standard volume licensing for 10 servers (10 servers x $2,120 per license). With his deployment time of 8 hours, 39 minutes, and 20 seconds, multiplied against his labor cost of US $75 per hour, Arturo's company spends US $21,849 on licensing and labor to deploy 10 servers.

Meanwhile, Maya purchases 10 PowerEdge R770 servers with Windows Server 2025 OEM licenses factory installed by Dell Technologies. She spends approximately US $12,720 on Windows Server 2025 Standard OEM licensing for 10 servers (10 servers x $1,272 per license). With her deployment time of 3 hours, 14 minutes, and 20 seconds, multiplied against her labor cost of US $75 per hour, Maya's company spends US $12,962 on licensing and labor to deploy 10 servers.

Maya saves her company approximately US $8,887 on licensing and labor costs compared to Arturo. In addition, she can invest her time savings into other IT tasks that benefit her company.

Arturo
Volume license manually installed

Licensing costs = US $21,200
Labor costs = US $649

Deployment total cost = $21,849

Maya
OEM license preinstalled

Licensing costs = US $12,720
Labor costs = US $242

Deployment total cost = US $12,962

Cost savings compared to volume licensing = US $8,887

Relieve the IT Burden with Reliable Technical Support

To accurately assess your servers' OpEx, we strongly recommend factoring in technical support. Reliable tech support can significantly streamline server deployment and increase staff productivity. The best tech support offers a single source of expertise. When troubleshooting a deployment, you need to know if a problem is coming from hardware or software. With traditional volume licensing, tech support is spread across separate vendors. This lack of integrity can make it difficult to pinpoint the source of a problem.

We cannot overemphasize the time and frustration you can be spared with access to integrated, end-to-end support that covers hardware and software. Because OEM licensing is factory-installed by Dell Technologies, you get integrated tech support that covers both the PowerEdge R770 server and Windows Server 2025. Dell ProSupport™ IT-management services include proactive monitoring of PowerEdge hardware, proactive diagnostics and monitoring of the Windows Server environment, and enterprise-grade tech support with 24/7 availability.

Arturo and Maya: IT Support

Arturo deploys PowerEdge R770 servers *without* Dell ProSupport IT-management services. He starts seeing deployment alerts; however, he isn't sure if the problems are hardware- or software-based. As the hours mount, so does his frustration with the hardware and software vendors, who start pointing fingers instead of helping him find answers. He continues to jump between vendors, trying to resolve conflicting diagnoses and suggestions. After hours of searching, he finds a workaround posted online in a developer community. Arturo's boss is unhappy because the extended troubleshooting time delayed server deployment. The extra hours spent on deployment also reduced Arturo's productivity, taking time away from his other important IT tasks.

Maya, on the other hand, deploys PowerEdge R770 servers *with* Dell ProSupport IT-management services. The deployment runs smoothly and as expected, except for a troubling alert indicating a stopped device service. She contacts Dell ProSupport via chat, and the agent keeps their chat open until the problem is resolved. Maya is relieved, and her boss is happy because the Dell Technologies support enabled Maya to deploy the servers ahead of schedule.

Arturo
Volume license manually installed

Has separate tech support for hardware and software:

- Spends hours trying to identify/ diagnose a problem.
- Wastes more time with vendors finger-pointing instead of problem-solving.
- Spends additional hours researching online communities.
- Installs a workaround that is not vendor-certified or supported.
- Deploys servers after the deadline, which makes his boss unhappy.
- Loses productivity, taking time away from other tasks.

Maya
OEM license preinstalled

Has a single source of integrated hardware and software tech support:

- Contacts Dell ProSupport™ for 24/7 tech support.
- Receives complete support until the problem is resolved.
- Deploys servers ahead of schedule, which makes her boss happy.
- Increases productivity, using the time saved to address other tasks

Why OEM Licensing Makes the Most Sense for SMBs

Companies must constantly evolve their infrastructures to reduce risk and stay competitive. SMBs can find it challenging to modernize, hampered by limited IT budgets and resources. For these organizations, we recommend standardizing your servers with preinstalled OEM licensing to help ensure business continuity and agility, while also lowering TCO.

The OEM license delivers significant upfront cost savings, up to US $848 less than the volume license. Our deployment testing results revealed the preinstalled Windows Server 2025 OEM license deployed a PowerEdge R770 server up to 62% faster, using up to 71 fewer manual installation steps, than the traditional volume licensing approach. Windows Server 2025 enables SMBs to future-proof their infrastructures for modern workloads, including AI/ML, GPU-intensive processing, and containerized applications. The latest release of Windows Server comes with new security capabilities, such as hotpatching, which facilitate a pathway to robust, multilayered security.

Other TCO-lowering benefits for OEM licensing include a one-stop support shop that offers end-to-end assistance for hardware and software. Comprehensive tech support means fewer deployment delays and operational disruptions and greater productivity for IT staff.

Be like Maya and benefit from:

Hotpatching for automated security updates

Up to 62% less time to deployment

Up to 71 fewer steps for deployment

Up to 40% lower licensing costs

One source for tech support

Learn more about Microsoft OEM software from Dell Technologies.

Appendix: System Configurations

Our engineers conducted all testing on one PowerEdge R770 server at our in-house laboratory, using the system configurations and test procedures described in this section. For detailed information on test setups and results calculations, see the **Methodology**.

Table A | Storage platform configuration

Component	Test System
General	
Vendor and Model	Dell™ PowerEdge™ R770
OEM Part Number	FD8WT64
BIOS Name and Version	Dell 1.2.6
Non-default BIOS Settings	Not applicable (N/A)
Operating System (OS) Name and Version	Windows Server® 2025 24H2
Date of Last OS Update	N/A
Patches Applied	N/A
Energy Efficient Policy	Balanced Performance
Processor	
Number of Processors	2
Vendor and Model	Intel® Xeon® 6760P
Processor Core/Thread Count	64 cores/128 threads
Core Base Frequency	2.20 GHz
Stepping	1
Memory	
Total System Memory	2,048 GB
Number of Modules	32
OEM Part Number	Dell N66RP
Capacity	64 GB
Technology	DDR5 SDRAM
Speed	6,400 megatransfers per second (MT/s)

Component	Test System
Storage Controller	
Controller Type	Dell™ Boot Optimized Storage Solution-N1 (BOSS-N1)
Cache Size	0 GB
Firmware Version	2.2.13.2033
RAID Type	RAID 1
Local Storage	
OEM Part Number	Dell NVM Express® (NVMe®) ISE PE9010 Gen4 RI M.2
Number of Drives	2
Drive Capacity	480 TB
Data Transfer Rate	Negotiated 8 gigatransfers per second (GT/s)
Network Adapter	
Vendor and Technology	Realtek® USB gigabit Ethernet (GbE)
Number of Ports	1 Ethernet
Driver Version	11.4.211.2022
Cooling Fans	
OEM Part Number	ASSY,FAN,60X38,SIROCCO,2U,17G
Number of Fans	6
Power Supplies	
Vendor and Model	Dell™ MHS 1500 Titanium
Number of Power Supplies	2
Wattage	1,500 W per power supply

Endnotes

[1] Flashpoint. "**Russian hacker Q&A: An Interview With REvil-Affiliated Ransomware Contractor**." September 2021.

[2] Verizon. "**2020 Data Breach Investigations Report**." October 2019.

[3] Verizon. "**2024 Data Breach Investigations Report**." October 2023.

[4] Coalition. "**Cyber Claims Update: ransomware levels off, risks persist for SMBs**." September 2022.

[5] Legals365.com. "**The Impact of Data Privacy Laws on Small Businesses: A 2024 Guide Advocate And Legal Services**." Accessed March 2025.

[6] Microsoft. "**Windows Server Catalog**." Accessed April 2025.

[7] Cost savings calculated using pricing information available at the time of testing for the Windows Server® 2025 Standard license, 16 cores, no client access licenses (CALs). Volume license = US $2,120; source: Microsoft. "**Windows Server pricing and licensing**." Accessed March 2025. OEM license = US $1,272, factory installed with the Dell™ PowerEdge™ R770 PowerEdge server; source: Dell Technologies. "**New PowerEdge R770 Rack Server**." Accessed March 2025.

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