



Support up to 290 VDI sessions

while maintaining acceptable response times



Balance performance with density

and consume only 2.46 watts per VDI session*



Deliver a better-than-average user experience

with a 6.2 Login Enterprise EUX Score**

*Based on iDRAC (Integrated Dell Remote Access Controller) power consumption data

**Login VSI says <5.5 is poor, 5.5 is average, and >7.5 is high.³

Dell PowerEdge R660xs: Maximize VDI density while delivering a strong user experience and minimize power consumption

Virtual desktop infrastructure (VDI) administrators endeavor to deliver the best remote-user experience while getting the most from data center resources. Dell™ PowerEdge™ xs servers have an open vent pattern for optimal airflow and are, according to Dell, specifically tuned for virtualization workloads.¹ These models also have fewer DIMM slots than standard PowerEdge servers, which reduces power draw. This, in turn, reduces cooling needs. These features in a 1U form factor enable admins to reduce data center carbon footprints by consolidating server racks and simplifying power and cooling needs.

We used the Login Enterprise benchmark to determine the number of remote desktop sessions a Dell PowerEdge R660xs server powered by two Intel® Xeon® Gold 6448Y processors could deliver within acceptable end-user latency parameters. This industry-standard benchmark helps IT teams “achieve the optimal balance between user experience and cost.”² We found that the Dell PowerEdge R660xs server configuration we tested supported 290 VDI sessions, consumed only 2.46 watts per VDI session, and delivered a better-than-average end-user experience (EUX).



Image provided by Dell.

How we tested

To measure VDI user density on the Dell PowerEdge R660xs server powered by two Intel Xeon Gold 6448Y processors, we set up a VMware Horizon® 8 VDI environment with Windows 10 images using two vCPUs, 3 GB of RAM, and running Microsoft Office 2019. We evaluated this PowerEdge R660xs configuration in multiple ways:

- **Determining the total VDI sessions:** To measure VDI user density, we used the Login Enterprise 2022 Knowledge Worker workload.⁴ The Login Enterprise VSIMax represents the total number of VDI sessions this Dell PowerEdge R660xs server configuration handled within acceptable latency parameters on this workload. In addition to EUX performance input metrics, Login VSI, the company behind the Login Enterprise benchmark, “carefully chose and tuned the timers to also reflect the load that a virtualization system experiences when increasing the number of sessions that run on that system.”⁵
- **Calculating VDI density:** We gauged power efficiency by determining the watts per VDI session the server consumed while running at maximum VDI user density. In our tests, the Dell PowerEdge R660xs powered by two Intel Xeon Gold 6448Y processors supported 290 VDI sessions and consumed an average of 714 watts at peak usage.
- **Evaluating the VDI user experience:** The Knowledge Worker workload keeps up to five Office 365 apps, plus Microsoft Edge, open simultaneously. The Login Enterprise EUX Score decreases as the number of users increases—just as performance decreases as systems get busier and process more load. The Login Enterprise EUX Score reflects real-world virtual desktop user operations.”⁶

The Login Enterprise benchmark and power efficiency results we report reflect the specific server configuration and VDI environment we tested. Any difference in the configuration, as well as network traffic, browser changes, or software additions, can affect these outcomes. For more information on our testbed, testing parameters, and reporting procedures, see the [science behind the report](#).

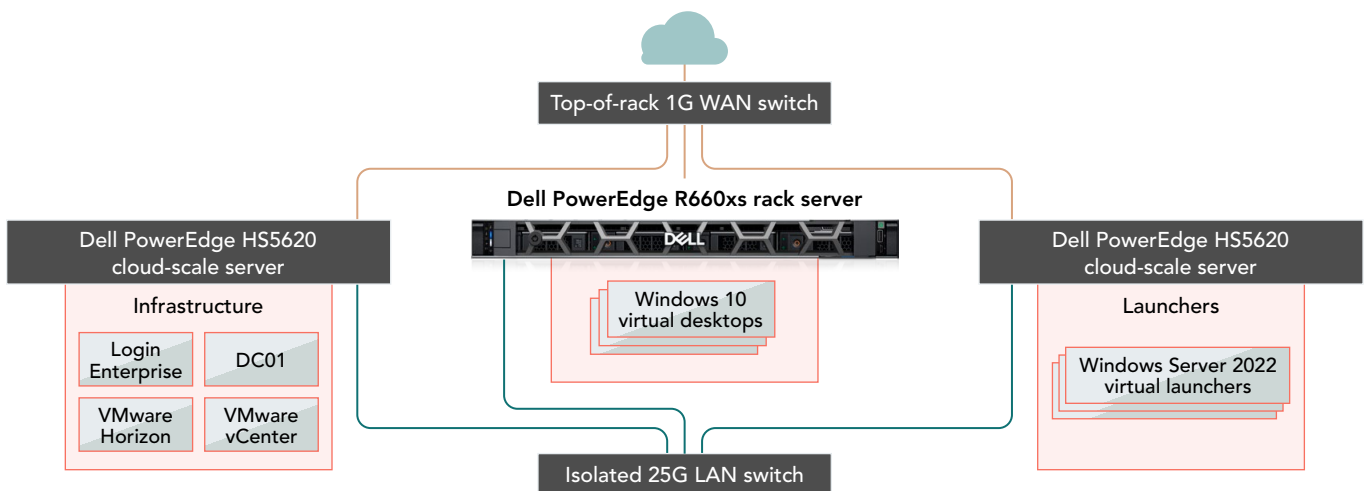


Figure 1: Our testbed setup. Image of the Dell PowerEdge R660xs provided by Dell. Source: Principled Technologies.

Support hundreds of remote desktop sessions

The Login Enterprise VSIMax reflects how many desktop sessions a server can support until the moment the end-user experience dips below an acceptable wait threshold. The benchmark determines the acceptable wait threshold based on a median of application response times. Once it has that, Login Enterprise assigns a rating at the point the EUX score falls below the predetermined threshold for 3 consecutive minutes.⁷

Supported 290 VDI sessions

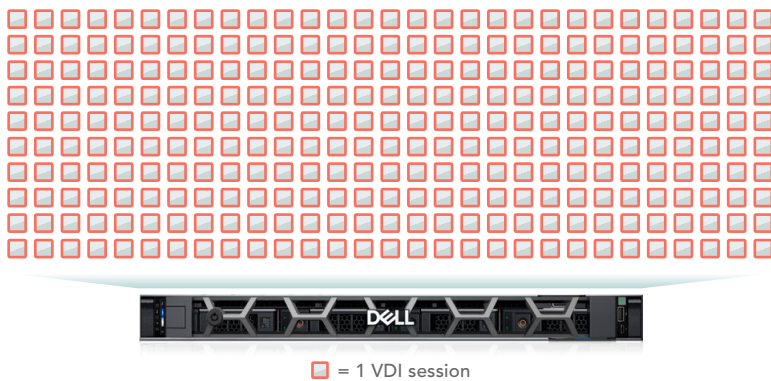


Figure 2: Login Enterprise 2022 Total Knowledge Worker VSIMax results. Image of the Dell PowerEdge R660xs provided by Dell. Source: Principled Technologies

Balance performance with density

Dell designed the PowerEdge R660xs server to “minimize the carbon footprint of your data center by better matching the system power consumption with anticipated workload requirements.”⁹ Our results show a Dell PowerEdge R660xs server powered by two Intel Xeon Gold 6448Y processors was capable of supporting 290 VDI sessions while consuming, on average, 714 watts under full load according to iDRAC power consumption data. That comes out to just 2.46 watts per VDI session.

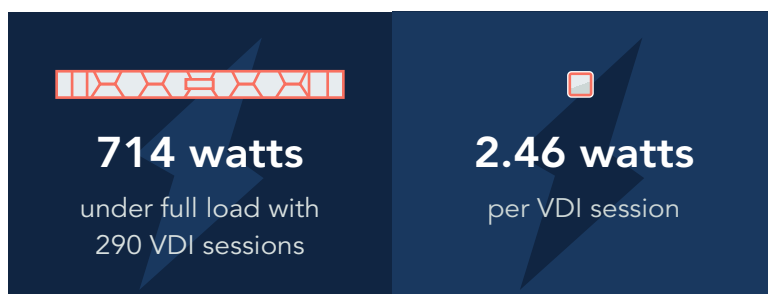


Figure 3: iDRAC power consumption results. Source: Principled Technologies.

About the new Dell PowerEdge R660xs rack server

According to Dell, the air-cooled PowerEdge R660xs is built to balance performance and density and is capable of running the most popular applications and workloads. It is a highly configurable 1U server that fits in existing data center environments. This Zero Trust-capable server can also integrate with OpenManage Enterprise and CloudIQ solutions to optimize server management and operations.

Fast performance

Up to two 4th generation Intel Xeon Scalable processors with up to 32 cores per socket

Fast memory

Up to 16 DDR5 RDIMMS (up to 4,800 MT/sec)

PCIe® Gen 5 speed

High-bandwidth networking and storage throughput⁸

► Learn more about the PowerEdge R660xs at <https://www.delltechnologies.com/asset/en-us/products/servers/technical-support/poweredge-r660xs-spec-sheet.pdf>.

About iDRAC

Dell Technologies amplifies visibility into PowerEdge server hardware resources with the iDRAC embedded in every Dell PowerEdge server.¹⁰

Dell designed the iDRAC “for secure local and remote server management that helps IT administrators deploy, update and monitor PowerEdge servers anywhere, anytime.”¹¹

iDRAC features:

- iDRAC9 Telemetry Streaming
- Secured Component Verification
- iDRAC RESTful API with Redfish support
- Agent-free embedded server management¹²

Deliver a better-than-average user experience

The Login Enterprise EUX Score is derived from several actions that represent day-to-day activities and could affect end-user satisfaction.¹³ These are the operations the EUX score reflects:

- Launch a complete application with UI until it is ready for user input
- Keyboard input processing
- CPU-heavy actions
- Actions that mix CPU and disk I/O¹⁴

The Login Enterprise EUX application response times are a median of the slowest application response times, which better reflect how long users might find themselves waiting.¹⁵

Table 1: Login Enterprise Knowledge Worker EUX metrics for the Dell PowerEdge R660xs.

| Login Enterprise Knowledge Worker EUX metrics | Result |
|--|------------|
| EUX Score | 6.2 |
| Average of all app response time medians (seconds) | 1.50 |
| Median PowerPoint launch time (seconds) | 1.39 |
| Median Edge browser page load time (seconds) | 2.63 |

About Login Enterprise

The Login Enterprise benchmark mimics real user activity to determine the user experience and application response times in virtual desktop environments.¹⁶ According to Login VSI, Login Enterprise's 360° approach "delivers insights into the performance, cost, and capacity of your virtual desktops and applications – from production to delivery and across locations, settings, and infrastructure."¹⁷

About the Intel Xeon Gold 6448Y processor

Part of the 4th Generation Intel Xeon Scalable Processor family, the Intel Xeon Gold 6448Y processor has 32 cores, 64 threads, a maximum turbo frequency of 4.10 GHz, a processor base frequency of 2.10 GHz, and a 60MB cache.¹⁸ According to Intel, Intel Xeon Gold 6400 processors "are optimized for demanding mainstream data center, multicloud compute, and network and storage workloads."¹⁹

Conclusion

Choosing the right VDI solution can empower your employees to be more productive with a responsive desktop experience and set your company up for growth. In our Login Enterprise benchmark tests, a Dell PowerEdge R660xs powered by 4th Generation Intel Xeon Scalable processors supported 290 VDI sessions while consuming an average of only 2.46 watts per VDI session and maintaining acceptable virtual desktop response times. Maximizing virtual desktop density, as this Dell PowerEdge R660xs configuration did, opens the door to other benefits, including server rack consolidation and simplified power and cooling needs.



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Read the science behind this report at <https://facts.pt/tUnDL4> ▶



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