Dell 12th Generation OEM NEBS: Redefining Telecommunications Server Economics

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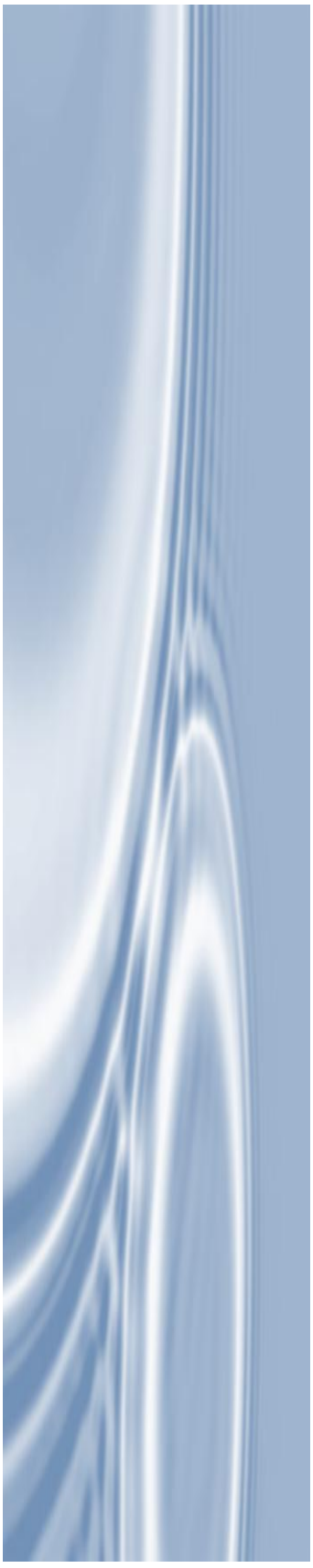


TBR

TECHNOLOGY BUSINESS RESEARCH, INC.

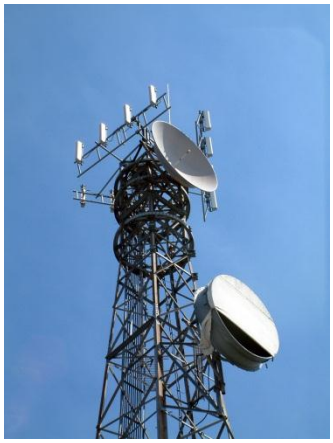
Dell's 12th Generation NEBS-certified PowerEdge Servers Deliver Reliability and Standardization to a Telecommunications Market in Transition

Executive Summary

Telecommunications providers face the difficult task of delivering continuous, high-quality service to customers while working in today's budget-constrained operating environment. Due to the critical nature of telecommunications services, carrier-grade, NEBS-certified servers are necessary to ensure natural disasters and other occurrences will not create downtime.

TBR believes that, until recently, the only choices for carrier-grade servers with high levels of reliability and disaster resistance carried high prices. Boosting the price of past products was their proprietary design, which not only added to their cost but also to their overall complexity. TBR also believes there is a trend toward simplicity in today's datacenters, as organizations seek more streamlined options that deliver high performance without overly complicated installation and configuration.

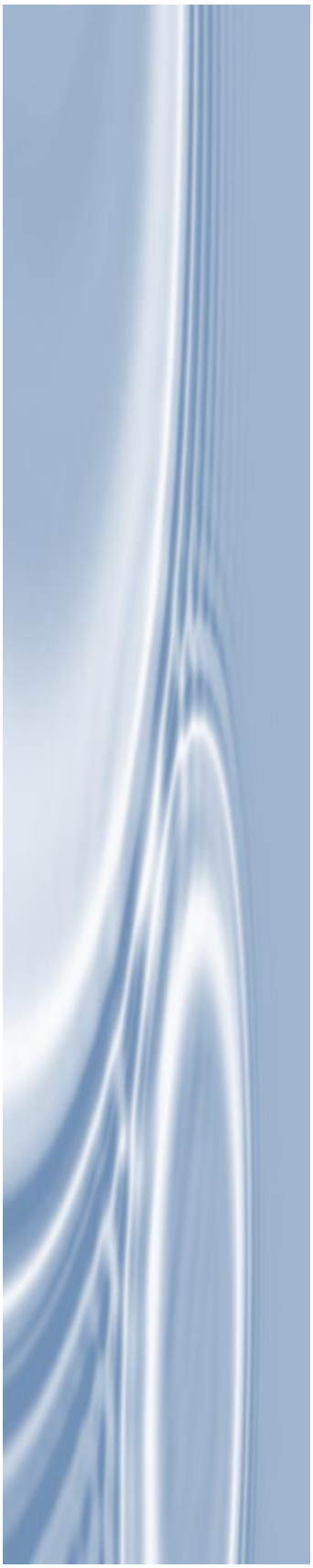
For telecommunications providers, provisioning servers and other equipment that can handle natural disasters and other downtime-threatening events is not only recommended, but required to keep service running. Therefore, a balance between cost and reliability is needed.



Dell now provides an answer to these problems for customers: Dell OEM Solutions designed and engineered its NEBS-certified servers alongside its general-purpose 12th Generation PowerEdge servers specifically to fill these needs. The servers are built to withstand a wide range of extreme, dangerous conditions and keep telecommunications services running without fail.

Unlike proprietary solutions, Dell OEM Solutions' servers are available in a commercial, off-the-shelf (COTS) design that customers can customize and deliver in an efficient, cost-effective manner. This unique approach of using standardized equipment compatible with general-purpose Dell servers aims to satisfy changing telecommunications requirements.

Dell has a long history of providing standards-based hardware and software for businesses, including servers, datacenter storage, PCs, laptops and workstations. TBR believes this extensive experience will serve customers well as Dell applies its history of combining standard hardware and IT advisory services to the telecommunications market. Dell now enters the



telecommunications market with servers designed to fit the needs of central office installations and other telecommunications environments that require effective, reliable server hardware.

Telecommunication providers count on reliable equipment from trusted vendors to avoid service-limiting downtime

Although equipment geared for telecommunications installations is often designed to accommodate harsh environments, NEBS-certified devices represent the pinnacle of telecommunications resiliency and sturdiness. Equipment reliability is the backbone of the telecommunications industry, where round-the-clock uptime is both essential and expected.

The need for such high levels of equipment reliability stems from the sheer number of potential events that can place telecommunications equipment at risk. Along with natural disasters, telecommunications outages can also occur as a result of lightning, fires or other sources of extreme temperature, extreme humidity, dust, vibration, corrosion, electrical faults, and electromagnetic interference as well as incompatible equipment. The presence of any of these factors can cause equipment downtime, which can disrupt communications across wide areas of a population.

Carrier-grade, NEBS-certified devices have been available to telecommunications customers for many years, but options have been limited to custom, expensive products that offer limited scalability and expandability. Dell set out to change this model with a value proposition that blends reliability through NEBS certification, cost reduction through standard components and high volume, know-how derived from Dell's immense datacenter business, and Dell services and support, which consistently garner high rankings.

Because the value of working telecommunications to a national infrastructure is immeasurable, operators count on NEBS-certified servers to ensure their equipment will withstand disasters and other potential threats to service. Increasingly, telecommunications customers also require commercial, off-the-shelf servers that are affordable and easy to deploy; Dell meets this requirement through its carrier-grade PowerEdge servers.

OEMs in this industry also have increasingly specific requirements that can help them effectively deliver their innovations to market. These include the option to customize and rebrand server products as well as the ability to provide extensive, 24/7 support from a trusted provider. Along with the standardized hardware from Dell OEM Solutions, these elements can help OEMs quickly and reliably serve telecommunications customers throughout the entire global market.

Dell transforms the telecommunications market model with standardized servers built to NEBS specifications

Dell OEM Solutions' approach to server requirements in the telecommunications industry is both unique and overdue. By melding the principles of standards-based computing with the NEBS criteria, Dell is able to provide customers with off-the-shelf servers that meet the stringent requirements of telecommunications environments.

	Dell 12th Generation General-purpose Servers	Dell 12th Generation Carrier-grade, NEBS-certified servers
NEBS Level-3 Compliance		✔
ETSI Compliance		✔
Dust filter bezel		✔
Power table throttling		✔
Shock resistance	✔	✔
Vibration resistance	✔	✔
Limited configuration set		✔
Fire retention	✔	✔
Static rails		✔
Slide-out rails	✔	
LCD access control panel		✔
OEM Identity Module		✔
Expanded Fan Control		✔
DC power supply		✔

Source: Dell OEM Solutions

Dell's 12th Generation PowerEdge R620t and R720t carrier-grade servers are certified both for NEBS Level 3 and ETSI (European Telecommunications Standards Institute) guidelines, and are based on open standards to maximize compatibility, scalability and expandability. These servers reflect Dell's commitment to the telecommunications industry to provide highly reliable, affordable equipment that minimizes the complexity typically involved with other options in the market, such as custom-deployed or otherwise proprietary server solutions. Dell OEM Solutions worked closely alongside the company's other engineering teams to determine the modifications required on the general-purpose 12th Generation PowerEdge servers to accommodate NEBS specifications.

The PowerEdge R620t (1U rack mount) and R720t (2U rack mount) are two-socket servers powered by Intel Xeon E5-2600 series processors. The R620t has two PCIe slots and supports up to eight 2.5-inch hard drives, while the R720t has seven PCIe slots and supports up to 16 2.5-inch hard drives. Both models feature redundant hot-swap 1100W DC power supplies. These servers also include an LCD Access Control Panel that provides chassis-front interaction to

give customers convenient, complete control of the platform.

Despite the ability of these servers to withstand harsh conditions, they operate the same as Dell's other standard servers and support the same operating systems, firmware and applications. These servers carry Dell's commitment to support, serviceability, and availability found in other enterprise-level products, helping to increase efficiencies in the telecommunications market.

Stringent NEBS requirements drive Dell's server design

To design the PowerEdge R620t and R720t, Dell OEM Solutions tapped into a large knowledgebase to obtain the insight necessary to satisfy the industry's requirements. First, the company utilized its deep pool of expert personnel to gather knowledge on the technologies and an approach that would best satisfy the telecommunications market. Second, Dell regularly engages with customers to attain broad levels of feedback pertaining to their needs and requests.

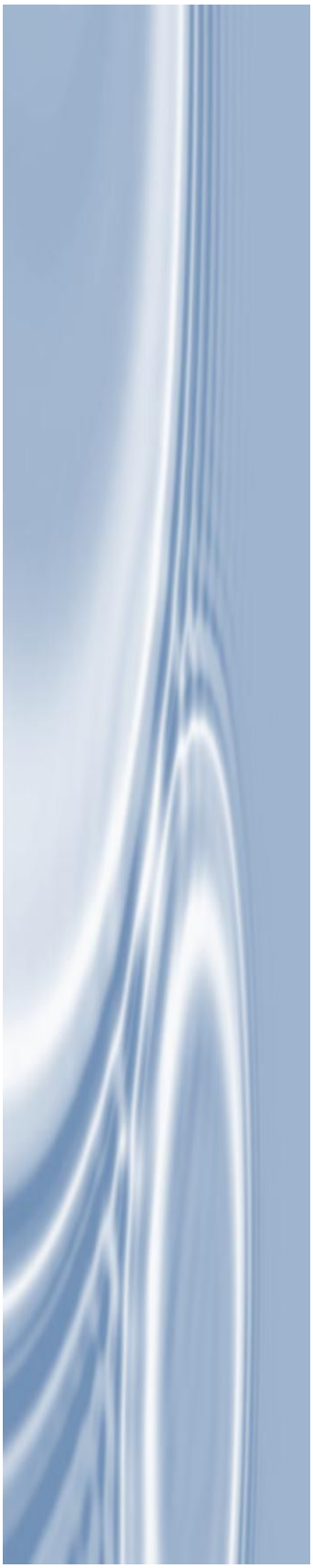
Throughout the process, Dell OEM Solutions engaged regularly with teams across the company to certify that the servers accommodate the mechanical and thermal requirements demanded by the NEBS certification. The group also made a wide range of alterations and adjustments to the general-purpose 12th Generation PowerEdge servers.

For example, Dell OEM Solutions worked to limit the servers' configuration set to adhere to the NEBS certification. Additionally, while the general-purpose servers are designed to limit power usage as the servers approach certain thermal values, the team conducted extensive research with the servers' thermal chambers to determine what the servers could truly support from a temperature perspective. As a result of this research and design implementation, these carrier-grade servers gradually scale back performance as they reach higher thermal values to ensure performance is maintained as long as possible.

Dell also added a filter bezel to the servers to prevent penetration of dust and other particulate matter into the server cases. Furthermore, the servers include post-static rails, rather than sliding rails, to accommodate NEBS requirements for shock and vibration.

Dell's extensive OEM support bolsters the server buying experience

Dell addresses the evolving needs of the OEM market with features that help OEMs add extensive value to Dell's carrier-grade, 12th Generation PowerEdge servers. For example, OEMs can custom-design the servers, from the BIOS to the bezel, as well as other product elements, such as the branding of the product, packaging, and support documents. Also, Dell's Identity Module simplifies the distribution and maintenance of the customized BIOS, which



helps OEMs more quickly deploy updates.

As systems are built, OEMs have the option of integrating hardware, image, applications, peripherals, and documents to facilitate a consistent, organized product process. Dell OEM Solutions also provides OEMs with the option of testing applications on the Dell servers.

Another significant benefit of Dell's approach is its integration of Dell's support services, which provide 24/7 assistance to customers via more than 30,000 Dell employees in tech support, parts, and more than 500 spares depots with field services in more than 100 countries.

Dell is continuing its OEM XL Program, which helps OEMs get a better handle on their product lifecycles through core component stability and longer platform transition periods. This process can lead to lower recertification costs, and enables OEMs to avoid service-strategy updates typically necessary to accommodate unanticipated component changes.

For example, customers receive a six-month notification of component changes so they can be prepared when the change is deployed. Dell also works to hold the BIOS state as steady as possible—the company prefers customers encounter change as seldom as possible, but when change is necessary, the company wants customers to be comfortable during the process.

Conclusion

The telecommunications industry has a long, storied history that serves as the basis for many of today's most innovative technologies, including the Internet. Providers in this segment are experienced and knowledgeable about equipment that suits their requirements, including high-performance, reliable servers that can withstand natural disasters, harsh weather conditions, and other events that pose a danger to telecommunications availability.

The ability of Dell OEM Solutions to quickly deliver carrier-grade servers to market reflects Dell's long history as an enterprise server vendor. Similar to its process for designing general-purpose servers, Dell OEM Solutions started testing its carrier-grade servers substantially earlier than their market release date. By starting the testing process early enough in advance, the group prepared itself to address potential problems that might materialize during testing. This strategy ensured the servers were fully tested and prepared for carrier-grade use when they hit the market. This value extends to customers, which reap the benefits of a longer product lifecycle.

With the arrival of Dell's NEBS-certified 12th Generation PowerEdge servers, TBR expects Dell's entry into the telecommunications market with purpose-built hardware to be successful, particularly as customers benefit from Dell's ability to blend reliability, cost savings and experience. Furthermore, Dell's forward-thinking blend of standardized equipment and extensive OEM support should be effective for a market in transition.

About TBR

Technology Business Research, Inc. is a leading independent technology market research and consulting firm specializing in the business and financial analyses of hardware, software, networking equipment, wireless, portal and professional services vendors. Serving a global clientele, TBR provides timely and accurate market research and business intelligence in a format that is uniquely tailored to clients' needs. TBR analysts are available to further address client-specific issues or information needs on an inquiry or proprietary consulting basis.

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