UNDERSTANDING OUR UNIQUE FACTORY PROCESS

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SUMMARY

Dell EMC factory builds and customizes all servers

All Dell EMC PowerEdge servers are:

• Designed each generation to rigorous quality standards
• Put through a 6 step process where every server is tested from 4-24 hours depending on the product and custom order complexity
• Highly monitored through testing to ensure the system functions to the highest standards
• Monitored by engineering through the entire factory process seeking ways to constantly improve the build and delivery of each solution
• Globally certified in all factories with ISO 9001

Since founding in 1985, one of Dell’s most industry unique advantages has been its factory build process. For over 30 years, every user of Dell solutions have benefited from a thorough build and test process with a goal of producing the best possible IT equipment.

Regional factories provide servers for their specific part of the world. Every server shipped is customized to the exact user specification and then tested before shipping out. This exacting process has a number of different steps.

Thoughtful Design

The first step actually begins in the design process of the server itself. Dell EMC engineering plans all products with a goal of providing the easiest, most reliable solution to build, validate and then service if needed. Working with Dell EMC’s factories, engineering receives daily “real time” feedback on how to build and test all equipment. Engineering then constantly works towards ongoing generational improvements.

Months before any new product or solution launches, testing at each factory begins. Initially, an evaluation of the design of the product allows for an understanding of what new testing and features need planning for. Then a six week process of qualification testing begins a few months before initial launch with a goal of developing consistent work instructions and robust validation to ensure the best product quality. At launch, Dell EMC factories then work under a safe launch period to ensure reliability of the product before full scale manufacturing commences.
Quality

How to best deliver quality solutions is the primary focus from the beginning of any product’s life cycle. Dell EMC factories consistently monitor each of material, process, product and shipping quality to determine if there are any challenges and to ensure the best solution possible. This includes regular audits, random sampling and thorough testing of every shipment. This all follows a 6-sigma Customer Quality process that also tracks all service calls seeking trends for product improvement.

Testing

Factory testing of each product follows a rigorous process after each server build. There is an initial test of the system followed by two separate extended tests that verify the quality of every component. The software is subsequently installed and a final test of the system is conducted. This testing can last between four and twenty four hours per system depending on the complexity of the product and custom order. This testing is closely monitored and if a component fails testing, the component is replaced and retested. Depending on the kind of failure and type of repair, the test is resumed starting from the step that failed, or is completely rerun. For example, if hardware is replaced then the test must be restarted from the beginning.

Every server goes through this extensive testing. Testing includes detecting the components (to verify they are present and well connected), checking all characteristics match the order (for example, size and speed of DIMMs), a deep stress test for key components like memory, processors and hard drives and the events log is checked numerous times.

Thermal performance is monitored all along the testing process including those times extremely high workloads are tested.

To further ensure quality, the Dell EMC factory and product design core teams often perform customer on site evaluations to confirm the delivered stability of the solution. This also allows teams to get direct user feedback on recommended changes to the delivery and set up of all products. Early systems are also ordered and sent to Dell EMC labs for quick assessment. For Dell's 13th Generation of servers, there were a combined approximately 2,000 units evaluated through these checks.

If an issue is found, Dell also tracks all shipments into and out of its factories. Dell EMC always knows where each component from its suppliers is and if a batch of components are found defective in the factory they are immediately quarantined. A new batch is then thoroughly tested to make sure the previous issue no longer exists.

Dell EMC factories also use a tightly controlled change management process via a quarterly block process of validated changes limiting the need for customer churn.

In Conclusion

The Dell EMC factory and testing process strives to provide a high quality and fully tested solution at all times. This extensive delivery process ensures consistent daily feedback to Dell EMC engineering on ongoing improvements from product design to quality helping Dell EMC provide the best solutions each order.