DELL Technologies

Summary

The PowerEdge Product Group and Services, in partnership with Intel®, have purpose-built a program to directly support the growth and specific needs of Cloud Service Providers. This includes hosters, B2B Service Providers, and B2C Service Providers like you. We are offering the Hyperscale Next program to select pre-approved accounts.

This Direct from Development (DfD) tech note summarizes how our rack integration service enables rapid time-to-value by delivering ready to deploy rack solutions.

Authors

Brian Hahn
Jordan Hogan
Delmar Hernandez
Server and Infrastructure Engineering

Hyperscale Next: Rack Integration

Hyperscale Next

As the public cloud market accelerates business operations and functionality for customers, the largest hyperscalers dominate the cloud infrastructure market and often get favorable treatment from supplying vendors, including advanced access to new technologies, helping them market faster with differentiated services. Unfortunately, this makes it harder for other CSPs, hosters, and online service providers to provide differentiation and innovation. Most must wait until general availability to test new technologies. It can take them several months to take new technology from testing to full production, making it difficult to respond rapidly to evolving technologies and customer demands.

The Dell Hyperscale Next program is designed to help our cloud customers react to evolving technologies and customer demands, expand their cloud services and applications, and provide differentiated performance for target workloads. The program includes early access to new technology, rack integration, factory server configuration, ProSupport One, Self-service support technology, and server performance tuning.
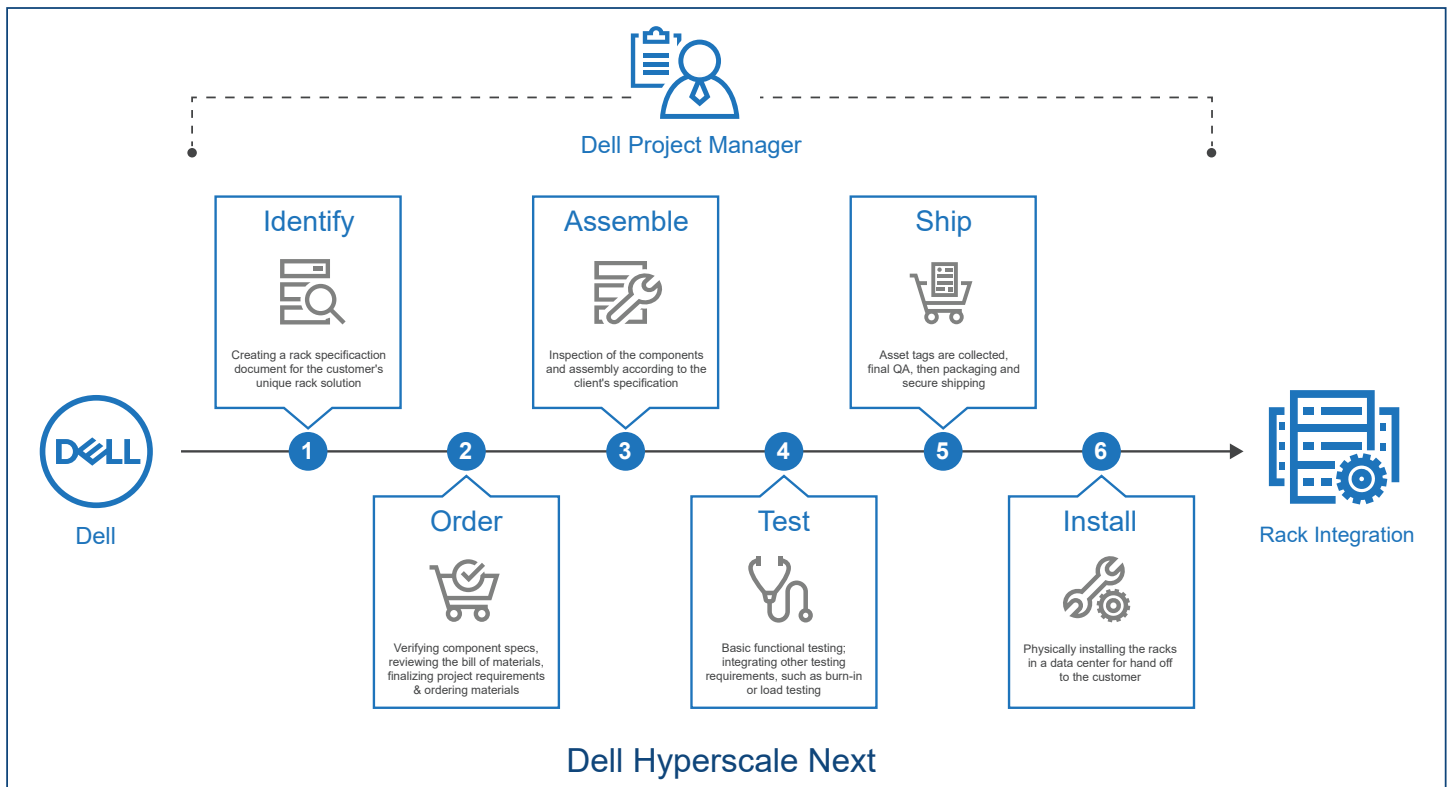
Rack integration

A single rack can comprise hundreds of individual components that need to be identified, ordered, assembled, and eventually tested. These components are acquired through various suppliers, with lead times ranging from days to months. In addition, components must be inspected, tracked, and stored until the rack is assembled. Given the complexity of acquiring the necessary components, a single part delay can wreak havoc on even the best planned schedules!

Designing, integrating, and testing all components in a rack that meets your unique environment is a complex process. The process requires expertise, including but not limited to server and rack engineering, networking, software integration and automation, hardware validation, purchasing, transportation, and logistics.

The great news is that the Hyperscale Next Rack Integration Service lets Dell experts manage the complexities of rack integration and deliver fully configured and tested rack solutions that can be deployed within hours of reaching your data center.

How does it work?

It starts with a Dell Project Manager. This person works to understand your unique requirements and is your single point of contact for the project. They scope the project, keep you updated, and work with the various Dell teams to develop a plan that works for you and your schedule. Let us take a closer look at the major steps.

Dell Project Manager

Identify

Creating a rack specificaction document for the customer's unique rack solution

Assemble

Inspection of the components and assembly according to the client's specification

Ship

Asset tags are collected, final QA, then packaging and secure shipping

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Order

Verifying component specs, reviewing the bill of materials, finalizing project requirements & ordering materials

Test

Basic functional testing; integrating other testing requirements, such as burn-in or load testing

Install

Physically installing the racks in a data center for hand off to the customer

Rack Integration

Dell Hyperscale Next

Planning and design

Planning is critical to a successful and on-time rack integration project, and we analyze every detail. During this phase, we verify component specs, review the bill of materials, finalize the project requirements, and order materials. In addition, Dell has developed relationships with suppliers worldwide to ensure that we can get our customers what they need, when they need it.

Configuration collection

We create a rack specification document for your unique rack solution. This document includes the layout, servers, power distribution, networking, labels, and cabling. If your solution requires custom cables, we can work with our partners to make it happen. In addition, the document includes details on required firmware settings, firmware versions, and your software installation or configuration. Finally, this document is machine-readable, so our automated rack test suite can use it to validate that each component is installed and configured precisely to your specifications.

Before proceeding, our project manager reviews the document with you for approval or updates.

Factory build

Dell has rack integration sites worldwide where we have perfected the science of rack integration. First, the materials are collected and securely stored until assembly. Then, after everything is in place, our integration team inspects the components and assembles them to your specification.

Components that go into a rack are shipped in packaging to ensure that they reach their final destination intact. The packaging protects equipment but generates waste. The Dell rack integration service allows Dell to recycle and reuse packing material that may otherwise find its way into a landfill.

As outlined in our FY21 ESG Progress Made Real Report, Dell has committed that by 2030, 100% of our packaging will be made from recycled or renewable material. Read more about what Dell is doing to advance sustainability here.

Server testing, imaging, and provisioning

Using the BIOS, iDRAC, and other component settings defined in the rack specification document as input, our automated rack integration framework configures settings on each server. This step saves our customers hours because

they do not have to perform onsite manual provisioning or develop automation to do it themselves. After configuring the servers, our automation framework performs basic functional tests and checks server event logs for errors. In rare instances, a hardware failure occurs, and we have direct access to replacement parts to allow us to move forward quickly.

We also use the rack integration framework to install custom software or operating systems during server provisioning in a consistent and repeatable manner. Our software development team is also available to work with you to integrate other testing requirements, such as burn-in or load testing, to minimize or eliminate your onsite provisioning to further your rapid time to value.

Network, power, and serial testing

The automated rack integration framework collects the MAC data from all servers and switches and confirms correct network connectivity across the rack by comparing it to the rack specification document. We repeat the process for any serial devices.

Also, the integration framework methodically cycles power on smart PDU sockets and confirms that connected devices power off when they should.

Final test and asset report

We consolidate the test results into a final test report, or "green sheet" after completing the build, testing, and provisioning process. This green sheet tells the team that a rack is ready to ship!

Collecting asset information can be tedious. Therefore, our integration framework collects all asset info, such as network card MAC and Dell service tag data, during the integration process. We then combine the data into a carefully formatted report that our customers can programmatically read to update their asset information before rack delivery, saving even more time.

First article inspection

We conduct final rack inspections and a first article inspection where we select a random rack and manually confirm every requested configuration change. We invite our customers to participate in person for the first article inspection, or we record videos and photos of the inspection and share them before shipping.

Shipping and installation

The racks are loaded into trucks, securely strapped using extensively tested standards, and sent to their final destination. Upon arrival, Dell can physically install the racks in a data center or hand off to your team. We also offer onsite validation, where we can rerun server, network, serial, and power testing.

Let's get started!

Using the Dell Rack Integration service gives our customers rapid time to value by taking the complexity out of designing, building, and deploying enterprise rack solutions. Our experts use years of partner relationships, experience, and best practices to make the process painless and efficient. Work with your Dell account team for more detailed information or email to hyperscale.next@dell.com.

References

Dell Configuration and Rack Integration Services

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