Realizing the Value of Open Compute

Technical Note by:

Patrick Kirkland
Julie Metting

SUMMARY

Customers often ask how they can reduce costs and become more efficient in the cloud era. Many perceive value that the Open Compute Project (OCP) servers will help them quickly achieve those goals but often find that reality does not match the full promise. Dell EMC Extreme Scale Infrastructure (ESI) however has been architecting the systems behind many of today's top cloud providers since 2007 and leverages this expertise to deliver more customer value with a combination of OCP-Inspired™ platforms and PowerEdge servers tailored to meet actual customer needs at scale.
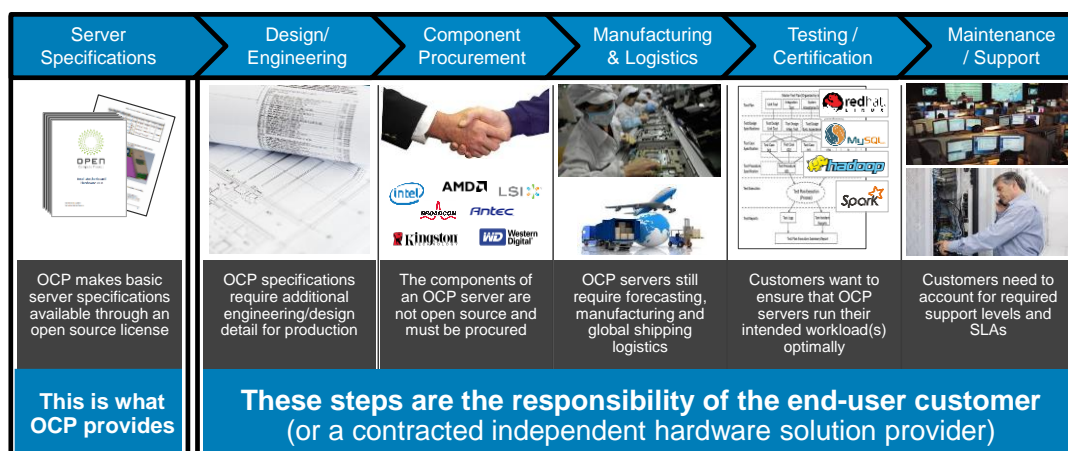
Find full value of our DSS 9000 rack-scale infrastructure for service providers at scale environments. This platform can often deliver the value required by those organizations that have sought out the value and benefits of OCP.

Background & Solutions

The founding of Open Compute Project (OCP) brought attention to the rapidly-expanding world of hyperscale computing. Companies including Facebook, Microsoft and Google had developed a new model of IT infrastructure that relied on large numbers of less feature-rich servers to deliver web-based services to their customers. These hyperscale companies were recognized for deploying the most efficient datacenters on the planet and the IT world was watching closely, trying to emulate their success. For many years, the details of how these hyperscalers achieved their efficiencies were kept secret, but that changed with the introduction of OCP in 2011.

The goal of OCP was to share best practices in design efficiencies via open standards to help IT organizations lower costs. To accomplish this, OCP sought to extend the open source model that revolutionized the software industry years before. However, creating truly 'open source' hardware has proven to be a more difficult task and although the OCP community is strong, the highly-touted benefits of reduced costs and increased efficiency of operation remain elusive. As a result, there are very few deployments of OCP hardware.

While OCP has a number of challenges – including too many contributions and a fragmentation of standards - perhaps the biggest issue facing customers looking to adopt OCP platforms is the limited scope of what OCP provides. As illustrated below, OCP offers specifications for cloud servers and other hardware but the actual manufacturing, assembly, integration, testing and support are all up to the customer to manage or contract to a provider like Dell EMC.

Server Specifications	Design/ Engineering	Component Procurement	Manufacturing & Logistics	Testing / Certification	Maintenance / Support
OCP makes basic server specifications available through an open source license	OCP specifications require additional engineering/design detail for production	The components of an OCP server are not open source and must be procured	OCP servers still require forecasting, manufacturing and global shipping logistics	Customers want to ensure that OCP servers run their intended workload(s) optimally	Customers need to account for required support levels and SLAs
This is what OCP provides	**These steps are the responsibility of the end-user customer** (or a contracted independent hardware solution provider)				

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Large cloud companies like Amazon, Facebook, Microsoft and Google have big internal organizations to manage each of these areas but the vast majority of customers do not. This means that any benefits that might be realized in terms of upfront CapEx costs by removing features from each server are often more than offset by the OpEx costs of all of those extra people; at least until a company reaches massive scale, typically with several hundred thousand servers or more under management.

In addition, OCP specifications address less than 10% of the cost of a typical server (i.e. chassis, motherboard, sheet metal, racks, & PSUs). More than 70% of a server's cost comes from commodity components like CPUs, memory, storage and add-in cards. So unless a customer is already big enough to demand discounts on such components, cost savings will be highly limited overall.

With all of that in mind, Dell EMC remains a strong proponent of open industry standards & the OCP community. We helped found OCP and have participated directly in the organization since its inception, so we are well aware of its benefits as well as its short-comings for customers.

Conclusion & Recommendations

Customers often equate OCP hardware with scale-out tenets (cost benefits, control of design items, conformity to a known state and choice of vendors). With ESI's heritage in serving hyperscale and scale-out markets, we can help customers reduce costs and increase efficiency at scale. For customers asking about OCP platforms, remind them that Dell EMC has the industry's #1 portfolio of servers for a reason.

A key part of that portfolio is our DSS 9000 rack-scale infrastructure, which has been recognized as OCP-Inspired™ by the OCP Foundation. Built for service providers looking to incorporate hyperscale principles into their datacenters, the DSS 9000 provides a simple, flexible & cost-efficient platform to unify compute, storage and networking with industry-standard management APIs like DMTF Redfish and Intel Rack Scale Design (RSD) to deliver unmatched open computing agility.

ESI can also help tailor our industry-leading Dell EMC PowerEdge servers to meet specific customer needs or include particular components, all backed by Dell EMC's leading global warranty & supply chain organization.

'Server' Cost Contributions

36%	13%
OCP influenced 9%	23%
14%	5%

■ CPU ■ Memory ■ HDD ■ ToR SW ■ Utilities ■ Other
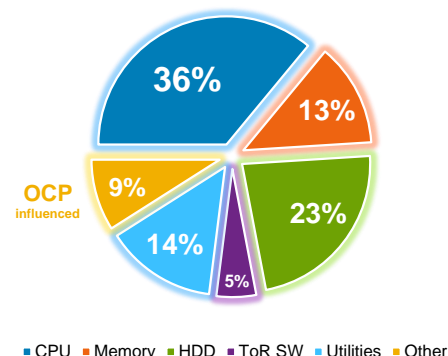
DSS 9000 rack-scale infrastructure
*Availability limited to select service providers

OCP challenges for customers

- Lack of fault tolerance
- No included support or warranty; up to customer
- Many tier 3 ecosystem vendors
- May need datacenter redesign
- Limited interoperability with OCP and non-OCP solutions

For more industry information:
Forbes coverage: Three Reasons OCP Isn't Meeting the Demands of Mainstream IT
Moor Insights discussion paper: The OCP Provides Inspiration, but Delivery is Unclear

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