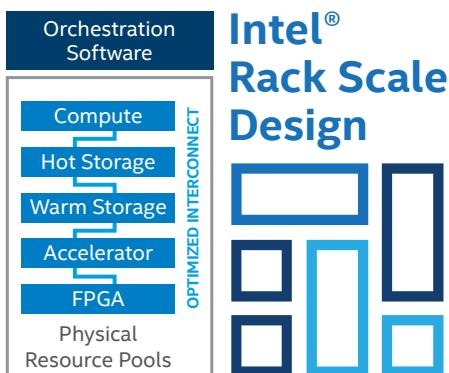


# Meeting the Challenges of Data Center Digital Transformation

**Intel® Rack Scale Design is the industry-aligned architecture that fundamentally changes how a data center is built, managed, and expanded over time**



## Data Is Exploding—Is Your Data Center Ready?

Experts predict that there will be 50 billion connected devices by the year 2020,<sup>1</sup> all generating huge amounts of data. Yesterday's data center is not going to be able to keep up. The Internet of Things, big data analytics, and machine learning are driving an annual increase of 30 to 40 percent in compute power and data storage capacity.<sup>2</sup> Traditional procurement, provisioning, and management methods are inadequate for today's hyperscale data center. IT teams need a digital transformation solution that meets the capacity demand, reduces cost, and simplifies data center management.

## Future-Proofing the Data Center with Intel® Rack Scale Design

The traditional data center houses hundreds or thousands of server racks; each server has its own processors, memory, storage, and other resources. When one of those servers breaks down or needs upgrading, the entire server is usually replaced, even though many of the components, such as storage, interconnects or cooling fans, are still perfectly good. This approach is wasteful and expensive.

Intel® Rack Scale Design (Intel® RSD) is an architecture, aligned to industry-standards, that enables IT to buy only what they need, when they need it. Intel RSD divides the traditional homogenous server into different resource sections within the rack. Available compute, storage, and accelerator resources are attached to a high-speed interconnect fabric, enabling users to compose an optimal system in seconds. By transforming the way a data center is built, managed, and expanded, Intel RSD enables the data center to be more economical, flexible, simpler to manage, and easier to scale out on demand. It also sets the stage for advanced analytics-based data center optimization solutions. And because Intel RSD is aligned with industry standards, you get increased vendor choice and built-in future-proofing.

	<b>FLEXIBLE</b>	Quickly and dynamically configure customized systems to meet your needs
	<b>MANAGEABLE</b>	Discover, compose, and monitor resources with powerful, modern API-based software
	<b>ECONOMICAL</b>	Buy and upgrade only what you need and when you need it
	<b>OPEN</b>	Benefit from choice, interoperability, flexibility, and industry-wide innovation

## Reap the Benefits of Disaggregation

Intel RSD provides APIs that enable dynamic composition of resources to meet specific workload requirements. Data center managers can purchase a mix of hardware modules to match current needs, and adjust them as workload characteristics evolve, reducing the need for overprovisioning in anticipation of workload changes. This increases resource utilization and reduces the cost per unit of capacity.

Disaggregation also makes refreshing equipment more economical. Consider a standard 3U server chassis with 14 blades. Refreshing that chassis by replacing all the blades but keeping the chassis itself along with the networking switch, power supply, and fan modules, saves 17 percent over a full-acquisition refresh. But with fully disaggregated servers, you can refresh only the CPU and DRAM modules, saving 44 percent over a full-acquisition refresh.<sup>3</sup> Since resources are pooled and better utilized, fewer resources (such as NVMe\* drives) are needed.

In addition, there is no need to reinstall the OS or spend time replacing parts unnecessarily. In our internal tests, we determined that disaggregated servers represent a reduction of up to 77 percent in technician time due to far fewer handoffs and required skill sets.<sup>3</sup> Faster refresh of CPU and memory can also reduce maintenance and downtime issues, further reducing OpEx.

## Intel: Imagining Tomorrow, Then Building It

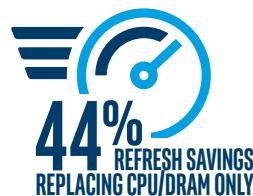
Intel RSD is only one example of how Intel is contributing to digital transformation by redesigning the data center with advanced technology and architectural innovation. Other examples include the following:

- Large gains in performance and compute capabilities with the Intel® Xeon® processor Scalable family
- Ultra-fast Intel® Optane™ storage and storage-class memory
- High-speed networks based on Intel® Silicon Photonics

Intel RSD can take advantage of these innovations, boosting their value across the data center.

## POTENTIAL SAVINGS DURING SYSTEM UPGRADES<sup>3</sup>

### CAPEX



### OPEX



## Leading the Way to Interoperability

Intel is committed to collaborating with the ecosystem to make innovations available to enterprises worldwide. Intel RSD incorporates industry-wide standards developed in the DMTF Redfish\* working group with contributions from Intel, the Storage Networking Industry Association\* (SNIA\*), and many other companies. Working with standards bodies, OEMs, ISVs, and other industry players, Intel is able to share knowledge and drive interoperability through performance testing, definition of industry-standard specifications, and other ecosystem activities.

## Get Started with Intel RSD Today

In an environment of explosive data center growth, Intel RSD can expedite the transition to an open, modular, software-defined data center. Intel RSD defines a new infrastructure blueprint that offers more flexibility and scalability, enhanced security, and better control, while delivering substantial CapEx and OpEx savings. Products are available now from major vendors including Dell EMC\*, Ericsson\*, HPE\*, Huawei\*, Inspur\*, Quanta\*, Radisys\*, Supermicro\*, and Wiwynn\*, as well as ISVs such as AMI\*, Canonical\*, and 99Cloud\*.

Learn more about how Intel RSD can accelerate the digital transformation of the data center by visiting [intel.com/intelrsd](http://intel.com/intelrsd) or contact your local Intel representative.



<sup>1</sup> "The Internet of Things: How the Next Evolution of the Internet Is Changing Everything."

<sup>2</sup> "Cisco Global Cloud Index: Forecast and Methodology, 2015–2020."

<sup>3</sup> "Disaggregated Servers Drive Data Center Efficiency and Innovation."

All information provided here is subject to change without notice. Contact your Intel representative to obtain the latest Intel product specifications and roadmaps.

Cost reduction scenarios described are intended as examples of how a given Intel-based product, in the specified circumstances and configurations, may affect future costs and provide cost savings. Circumstances will vary. Intel does not guarantee any costs or cost reduction.

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