

# Semiconductor Product Design & Verification *in* the cloud

Secure, high performance and scalable Electronic Design Automation (EDA) allows product developers and engineers to solve complex simulation and verification problems using large-scale, parallel processing.

## AWS helps you:



Deploy all or part of your EDA workflow for **faster project completion times**

Increase EDA performance and reduce costs by right-sizing your compute environment to meet the unique needs of each application to **get maximum value from your software investments**

Securely manage critical design intellectual property (IP) using a **range of storage and security options**

**Cost-optimize your storage** for compute-intensive workloads

## Semiconductor Industry Trends



## It's all about speed

In the world of semiconductor design and manufacturing, it's all about speed. Companies need to get products into customers' hands as fast as possible to meet tight delivery deadlines.

High-performance compute (HPC) capacity and machine learning capabilities allow semiconductor companies to scale design environments to accelerate product development, gain efficiencies, and speed time-to-market.

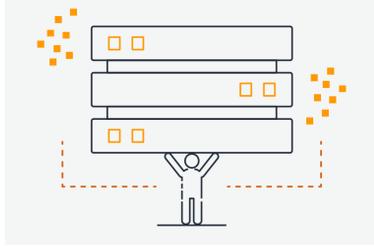


"The International Data Corporation (IDC) forecasts worldwide technology spending on the IoT to reach **\$745 billion this year** and **\$1.2 trillion in 2022**"

Source: KPMG Global Semiconductor Industry Outlook 2019 - Semiconductors: As the backbone of the connected world, the industry's future is bright

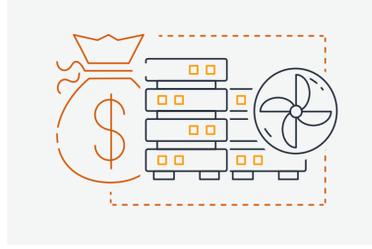
## Overcoming challenges and complexities

High-performance compute (HPC) capacity and machine learning capabilities allow semiconductor companies to scale design environments to accelerate product development, gain efficiencies, and speed time-to-market. However, an aging, costly, on-premises HPC environment can't deliver the scalability and ease of use required to make this happen. Common challenges include:



### Lack of necessary infrastructure

With an on-premises infrastructure model, it can feel impossible to accommodate the compute and storage resources needed to support business requirements. You cannot get the compute capacity needed to complete jobs cost-effectively if you lack the necessary physical space, cooling capacity, and power.



### Expensive overbuilt data centers

The amount of compute and storage resources needed in the early phases of product design may differ drastically to what's needed during the final months of design. When you want to gain access to a large number of machines over a short period of time, you're forced to overbuild local data centers to handle the peak loads.



### One size doesn't fit all

Different teams have different compute capacity needs, requiring flexibility to accommodate them all. Because everyone is not an HPC expert, onboarding and training for new engineers on the HPC cluster often requires assistance from an IT resource — adding weeks of time.



### Mistakes can be detrimental

When you can't run enough simulations during the chip design and verification process, you run the risk of potential design flaws. Finding a design flaw is costly and time-consuming, potentially requiring months to find the mistake and millions of dollars to fix it.

## AWS has the solutions to accelerate your development and reduce risk

### Speed & Innovation

Increase the speed of your entire design cycle by using a **Scale-out Computing on AWS**. With more scalability and elasticity, you can confidently and consistently deliver high-quality products to customers on time and focus on innovation in chip development instead of infrastructure management. Gain access to a nearly infinite infrastructure over a short period of time without having to overbuild local data center for peak loads. With HPC on AWS, you can support more devices, explore new technologies, and better understand how devices behave in the field.

"Our engineers across the globe can scale the solution three times faster than before. And they scale down just as easily, so if they don't need 100 GPUs for a job, they don't have to use them."

**Amit Gaikwad**  
Senior Manager, Wireless Engineering, Amazon Lab 126

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"This scalability and flexibility brought by AWS translates to a faster turnaround time. Using AWS, our EDA workload characterization turnaround time was reduced from a few months to a few weeks."

**Philippe Moyer**  
Vice President of Design Enablement, Arm

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### Scalability & Elasticity

To meet your needs for scalability and elasticity, set up your HPC environment on the AWS Cloud. AWS Elastic Compute Cloud (EC2) supports memory-intensive HPC workloads, providing you with the largest possible footprint. Using AWS, you can take advantage of the ability to distribute across multiple machines, to deliver better performance than local servers. This means you can scale quickly and easily to support integrated circuit design workloads.

"Using AWS, we can remove the compute scalability barrier, so we can focus exclusively on product innovations."

**Keith Ring**  
Vice President of Technology, Innovium

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"AWS takes care of undifferentiated heavy lifting, and that helps us focus on developing innovative features and delivering great value to our customers."

**Ambs Kesavan**  
Software Engineering and DevOps Director, Xilinx

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### Cost Savings

AWS allows you to launch compute resources and terminate them when EDA jobs are complete. This allows you to avoid costs of overprovisioning local capacity. You can build an AWS-based, multi-user R&D environment for scale-out workloads such as HPC and machine learning. This allows you to simplify compute-heavy Amazon Elastic Compute Cloud instances with a fast network backbone, unlimited storage, and budget and cost management. Quickly identify and fix bugs in a virtual environment to avoid spending millions of dollars to overhaul a new chip design following a tape-out.

"With Amazon EC2 Spot Instances, we easily save 85-90% in costs. That, in turn, allows us to experiment with less risk and ultimately develop higher-quality products for our customers."

**Joe Gardner**  
Principal Cloud Architect, National Instruments

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"AWS has allowed us to save up to 50% off our development cycles (Time)"

**Marc Naddell**  
Vice President, Mediatek Labs

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### Secure Collaboration

AWS offers a centralized, flexible HPC environment that works seamlessly for all users, regardless of their workload requirements. Enable your teams to perform computer-aided engineering workflows like model design, meshing, simulation, and post-processing visualization all on AWS. Engineers and designers can work from home with their own virtual supercomputers and powerful, cloud-based workstations a click away.

"We can now get instant access to compute and memory resources, which reduces waiting time and improves developer productivity."

**Ambs Kesavan**  
Software Engineering and DevOps Director, Xilinx

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"Using AWS, we can meet strict industry deadlines, fulfill device performance expectations, and continue focusing on creating the best chips we can build."

**Sanjay Gajendra**  
Chief Business Officer, Astera Labs

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## Get Started

Leading companies in Semiconductor & Electronics use AWS. Contact our industry experts and start your own AWS Cloud journey today.

Contact an industry expert