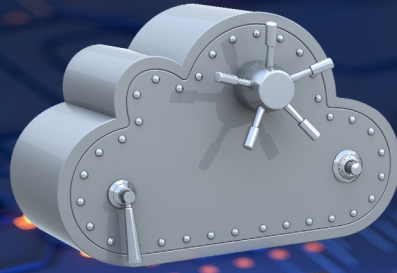cādence®

Cadence Cloud Portfolio

Introduction

Today's electronic design industry is on the verge of joining the cloud revolution—driven by accelerated design size, complexity, and the associated demand for productivity. The traditional concerns about security, IP, and data have largely diminished, outweighed by the significant cloud computing advantages—scalability, flexibility, and agility.

Cadence has taken a leadership position in addressing productivity challenges in electronic design and brought the benefits of cloud computing to our customers with the Cadence® Cloud portfolio. This set of offerings is the culmination of years of innovation, and it represents the future of cloud in EDA and system design and analysis.

Cloud Computing Meets Today's Electronic Design Requirements

The mega-trends of 5G, autonomous vehicles, industrial internet of things (IIoT), electrification, hyperscale computing, and artificial intelligence and machine learning (AI/ML) are compelling companies to refocus their efforts and resources on design innovation rather than continuing to invest in faster and larger on-premises compute, storage, and networking capacity. It's typically very difficult to predict infrastructure bottlenecks ahead of time or address them in a reactive manner through scaling of on-premises data centers. Assuming there is enough space, power, and cooling to handle more servers and storage, it still takes months to order hardware, receive shipment, allocate IT resources, and configure and install machines. When a project is at crunch time, the shortage of server capacity can bring your schedule to a crawl. But, during the rest of the year, having a bunch of extra servers sitting around idle can be extremely expensive.

A well-architected cloud built on a cloud service provider (CSP) infrastructure is the answer. Not just any cloud, but an EDA and system design-optimized SaaS-enabled cloud solution that is:

▸ Highly secure, efficient, scalable, and flexible

▸ Ready-to-use design environment that doesn't require IT setup

▸ Optimized for a variety of design flows and use cases

▸ Production-proven with leading foundry, IP, and cloud partners

Cadence Cloud Portfolio Overview

Early on, Cadence recognized the applicability of cloud-based solutions to EDA, and the value they can bring to customers for system and semiconductor design. Since then, Cadence has innovated on cloud; re-architected its portfolio to take advantage of multi-core, multi-threaded, and distributed machines; and introduced modern, cloud-first offerings.

Depending on the customer need—whether for a fully managed solution that frees the design team from managing cloud and IT infrastructure or for a self-managed solution—Cadence offers both options to cater to varying customer preferences. The customer has the option to move their entire design flow to the cloud, to only offload specific peak workloads, or to get instant access to system design and analysis software using the flexible Cadence Cloud portfolio.

The broad Cadence Cloud portfolio consists of:

▸ The Cadence-managed cloud:
  – The Managed Cloud Service offering provides a full flow for sustained use as well as for peak needs, including hybrid tools that add instant, scalable cloud capacity to your on-premises tools with the push of a button.
  – The Palladium® and Protium™ Cloud emulation and prototyping offering provides pre-silicon hardware system verification and debug.
  – The OnCloud SaaS e-commerce offering provides instant access to system design and analysis software.

▸ The customer-managed cloud:
  – The Cloud Passport model offers cloud-ready EDA tools for the self-managed cloud.

With the Cadence Cloud portfolio, customers can finally bridge the compute gap and gain a dramatic increase in productivity. You can match the verification workload by allowing designs to be tested until "good enough" becomes "great," accelerate library characterization from months and weeks down to days, reduce design signoff runs from days to hours, increase on-demand compute capacity for prototyping and emulation, and get instant access to right computational software like CFD and PCB analysis without any hardware/software setup.

To power the technologies and products of the future, the world's most creative companies require end-to-end solutions across chips, IP, packages, PCBs, and systems. Only Cadence has the deep design expertise and cloud-optimized EDA portfolio for semiconductor, package, and PCB design that has proven itself at over 300 cloud-based design customers around the world.

Portfolio Offering	Capability	Key Benefits
Cadence-Managed Cloud Offerings		
Managed Cloud Service	This Cadence-managed, EDA-optimized offering provides a fully integrated and proven cloud environment to jump-start semiconductor design, verification, and implementation. It provides all the benefits of cloud, without the burden of creating or maintaining a cloud environment, including licensed software and support, EDA-optimized cloud infrastructure, cloud-specialized services and support, CAD and IT support, and PDK and foundry expertise. The environment serves full design flows as well as peak capacity needs to augment an on-premises compute environment with on-demand cloud compute capacity for near-linear speedup.	• Rapid access to a ready-to-use cloud environment, including pre-installed tools, licenses, and job scheduler, as well as optimized compute and storage • Higher productivity by focusing on design, not IT • Secure and dynamic ability to adjust capacity as project needs change • No more upfront CapEx, only pay OpEx for the hardware you use • Production-proven environment and dedicated support team with foundry expertise reduces risk • Push-button scalability within the comfort of an on-premises tool cockpit with hybrid tool offerings
Palladium and Protium Cloud	This Cadence-managed solution offers secure and easy access to emulation and prototyping capacity. Hosted in a professionally managed, Cadence-contracted data center, the Palladium and Protium Cloud offers emulation and prototyping capacity to new customers and allows existing customers to add peak capacity easily.	• Provides capacity on demand to address changing project needs • No large upfront CapEx, pay OpEx for the capacity you procure • Supports all Palladium usage modes, including acceleration and coverage analysis, synthesizable testbench, and application-centric verification • Provides access to Cadence SpeedBridge™ Adapters
OnCloud E-Commerce	The Cadence-managed SaaS-enabled OnCloud e-commerce platform provides easy cloud-based access to comprehensive, scalable software solutions for your electronic system design and analysis including PCB design, multiphysics analysis, and computational fluid dynamics (CFD) analysis.	• Single virtual environment for system design software needs • Minimal setup required with e-commerce-like transaction process to access software and start design work in minutes • Instant access to system design technologies—anywhere, anytime
Customer-Managed Cloud Offerings		
Cloud Passport	These cloud-ready Cadence tools and license server have been optimized for use in the leading cloud service provider platforms: AWS, Azure, and Google Cloud Platform.	• Leverage scalability and flexibility benefits with self-managed cloud • High-reliability license server maintains uptime • Can be combined with other Cadence Cloud offerings

Cadence Cloud Value Proposition

Designed to take care of every customer need, the comprehensive Cadence Cloud portfolio delivers significant value by enabling our customers to collaborate globally, innovate faster, and reduce time to market significantly. Many of our customers leveraging the Cadence Cloud portfolio report decreases in turnaround times for EDA and system design workloads from a few months to a few weeks, improved overall cost efficiency, and an increase in employee satisfaction due to higher engineering productivity.

Rapid access to a full-flow cloud environment backed by an excellent customer support experience is a key value proposition of the Cadence Cloud portfolio. In a recent case study, one customer jump-started a large team's design flow without access to a physical office space by using the ready-to-use, EDA-optimized, and secure Cadence Cloud environment. Being up and running within a two-week period was critical to the speedup of their entire product development cycle.

Another key aspect of semiconductor design is collaboration and speedy resolution of any challenges in the engineer's workflow. This is where the fully managed offerings under the Cadence Cloud portfolio add significant value—any issues that come up are resolved within a matter of hours rather than weeks as the customer's design partners and the Cadence support team can be given access to the environment to resolve the issues at lightning speed.

Cloud and Foundry Partnerships

Cadence partners with leading cloud service providers such as Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform to provide best-in-class solutions, industry best practices, design methodologies, and cloud architectural guidelines. With numerous cloud regions and availability zones in every continent, our cloud service provider partnerships allow us to serve the Cadence Cloud portfolio globally.

Today, leading foundries around the world have published reference flows for design on cloud in collaboration with Cadence. Over 300 customers have benefited from our partnerships and have leveraged the Cadence Cloud portfolio for their electronic design in cloud.

Due to the Cadence Cloud portfolio's rigorous security, leading foundries have allowed use of their PDKs and IP in Cadencemanaged cloud solutions.

Complying with Cloud Security Standards

The perennial questions about security risks associated with storing design IP in the cloud have steadily dissipated over the years. In fact, many customers recognize now that their own data center security investment pales in comparison to the billions of dollars spent by cloud service providers. The variety of security services available on cloud tend to be more comprehensive than those securing an on-premises data center.

The Cadence Cloud portfolio leverages the native security of cloud service providers and builds additional layers of thirdparty security applications and industry best practices on top. The Cadence Cloud portfolio is ISO/IEC 27001:2013 and ISO/IEC 27017:2015 security certified, follows the Cloud Security Alliance (CSA)-recommended controls, and conducts independent penetration testing to proactively comply with changes in the security landscape.

Summary

The Cadence Cloud portfolio is built upon the foundation of our broad EDA and system design portfolio of sophisticated SoC, packaging, and board design tools as well as industry-leading cloud service provider infrastructure. Leveraging over 20 years of experience hosting production design workflows in the cloud, the Cadence Cloud portfolio is production-proven and delivers unsurpassed productivity, intelligent scalability, security you can trust, and flexibility to meet your demanding design needs. As customers in the semiconductor and electronics industry and beyond are placing cloud-first strategies at the center of their own digital transformations to collaborate globally, innovate faster, and speed up go-to-market, Cadence is playing a key role in democratizing cloud by leading the industry with an innovative and modern Cadence Cloud portfolio.