Secure Cloud-Based Workflow-as-a-Service (WFaaS) Environment with Role-Based-Access-Control (RBAC) for SoC Design

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During the DATE Conference, NTU and Silicon Cloud International (SCI) will demonstrate a next generation semiconductor design infrastructure with a private cloud computing Design-To-Release-Manufacturing (DTRM) SoC design workflow for universities and research institutions. This demonstration will give a “first look” view of the SoC design workflows using RTL simulation, digital place & route, analog circuit simulation within a self-contained, fully virtualized cloud computing infrastructure as part of a constrained SoC design reference workflow that can be used for university research and academic training curriculum.

All design data is maintained securely in the cloud. This private cloud-based system provides a secure, collaborative, and effective inter-organizational Role-Based-Access-Control (RBAC) working environment. Secure cloud-maintained third party semiconductor IP catalogs can be browsed, evaluated, and then selected for immediate project inclusion.

- Workflows can be defined, developed, catalogued, and securely provisioned through SCI’s cloud based workflow database and visualization software.
- EDA tools can be examined, selected, and executed within the context of a constrained, qualified silicon foundry reference workflows.
- Semiconductor IP can be imported, registered, staged, and catalogued for private use.
- Workflow provenance extends across users, projects, organizations, and IP’s. It also provides tracking and checking for workflow compliance and tape out requirement.
- Cloud user access controlled by an integrated secure Role-Based-Access-Control (RBAC) model

All EDA software application execution is performance-driven with respect to computing, memory, and networking. The SCI cloud is based on Virtual Machine (VM) configurations with a private cloud computing converged architecture using OpenStack cloud middleware running on Cisco Systems’ Unified Computing System (UCS) computing platform. The SCI Cloud provides VM configurations tailored to the High Performance Computing (HPC) requirement that are foundational to large semiconductor SoC design.