

CLOUDBANK

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Cloud + Researchers = Pain

“I need documentation specific to my research.”

“Setting up your first experiment in the cloud is too time-consuming, and different for each cloud platform.”

“There is no simple way to run multiple experiments with software already installed in one instance.”

“I just don’t have enough time to learn all this. Can you give me a jump start?”

“Research credits are difficult for us to track.”

“We need billing help. It’s opaque as to what is going on.”

“We need an expedited process for setting up experiments very quickly. Often we use cloud resources when we're on a deadline so quick setup is critical.”

Cloud financial issues

- **Overbuying**

- Unused instances on-demand, excessive purchase of reserved instances, buying for timeframes not utilized at start-up
- Mismatched instance sizing (actual memory/CPU utilization)

- **Billing and pricing difficulties**

- Inaccurate or obfuscated vendor metering. Are we actually getting what they say they are giving? Can we understand our bills enough to control costs?
- Billing errors. Application of discounts, rebates or even price terms causing billing irregularities

- **Resale market Illiquidity**

- Institutions can lose too much money in not being able to reuse excess capacity purchased
- Resell markets often have too little volume, strong deflationary price pressures

Researchers have unique and complex needs. Current solution providers today are not able to adequately serve researchers.

A new kind of hybrid entity is needed that leverages the abilities of university research experts and what cloud providers and resellers can offer...

What is CloudBank?

- CloudBank's mission is to make it easier for researchers to use cloud resources

A Public/Private Partnership to Expand Research

- New model for a public/private partnership in the service of the research enterprise
- Partnering with cloud solution provider Strategic Blue for financial engineering and account management support
- A larger group of stakeholders will benefit by CloudBank outreach efforts, such as workshops, publications, the CloudBank Center of Excellence on Cloud-Enabled Research and Education, and the CloudBank Advisory Board.
- Vision for service and sustainability that will broaden the impact of public cloud computing across all sciences and help ensure that students entering the workforce and research enterprise will be able to contribute and compete in the global economy
- Indirectly: solving a 'last mile' problem for the cloud providers: providing cloud support for researchers spread across universities and democratizing access to cloud

What is CloudBank?

- CloudBank is a response to NSF Solicitation 19-519: Enabling Access to Cloud Computing Resources for CISE Research and Education (Cloud Access)
- CloudBank's mission is to make it easier for researchers and educators to use cloud resources
- NSF-funded cloud access entity involving SDSC/UC San Diego, University of Washington and UC Berkeley
- Initial focus on the CISE research and education community
- PIs will request cloud resources via specific NSF proposals that call out the cloud access entity
- UCSD/SDCD leads portal development and cloud negotiations; UoW leads education outreach and training, UCB leads efforts around student and classroom software stacks and management.

Managed cloud services for the computer science research and education community

- Cloud solution consulting and cloud training, proposal assistance
- Account setup and account management support
- Grant permissions to research group members and students
- Help researchers translate computing environments to the cloud, including multiple cloud providers
- Analyze cloud usage and cloud spend, identifying different kinds of savings
- Recover unused cloud credits and carefully monitor usage and spend
- Flexible cloud terms tailored for their schedules and needs
- Bundling multiple small requests that come directly to NSF into a bulk request to cloud providers, saving money
- Savings passed along to researchers that would otherwise be unavailable to them
- Help with spend forecasting, set spending limits, and customized resource durations and start/stop schedules
- Provide “run-away” instance protection options and other risk mitigation services

CloudBank Opportunities

Service opportunities

- Immediate
 - CISE-funded researchers
 - CISE researchers with non-CISE funding
 - CB partnering institution researchers
- Future
 - Other NSF-funded research
 - NIH-funded research
 - Corporate- and foundation-funded research
 - International collaborations

Sustainability opportunities

- Resale benefit share with institutions
- Use of aggregated, reserved or committed purchases for short-term workloads
- Flexibility payment program
- Special or unusual workload pricing
- Provider programs (training, credits, etc.)
- Administrative computing resale share

Timeline



Year 1

- Development of user portal
- Cloud provider contract negotiation
- Education outreach and training
- Advisory Board

Years 2-5

- Production operations
- Operational support for NSF solicitations
- PI and user training and support
- Annual cloud workshop

For further information: <http://www.cloudbank.org>



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Managed Services to Simplify Cloud Access for Computer Science Research & Education

The University of California, San Diego's San Diego Supercomputer Center and Information Technology Services Division, the University of Washington's eScience Institute, and the University of California, Berkeley's Division of Data Science will develop and operate CloudBank, a cloud access entity that will help the computer science community access and use public clouds for research and education by delivering a set of managed services designed to simplify access to public clouds. Driven by the profound potential of the public cloud and the associated complexity in using it, CloudBank will serve as an integrated service provider to the research community through a comprehensive set of user-facing and business operations functions. These services will span the spectrum from novice to advanced cloud users, including front line user support, cloud solution consulting, training, and assistance in preparing proposals that include cloud resources. CloudBank will provide innovative financial engineering options that will give researchers more flexible cloud terms tailored for their needs and contribute to the sustainability of

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