

# Towards Cloud Research Support

Understand user requirements by  
consultation and survey

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# Motivation

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- Public clouds have great potential to advance research, but there are gaps that need to be addressed in order to make this happen
- Understanding the gaps to better supporting research in public cloud at higher education

## **Challenge - Limited resources - IT staff**

- Method
  - Survey by emails
  - Consultations

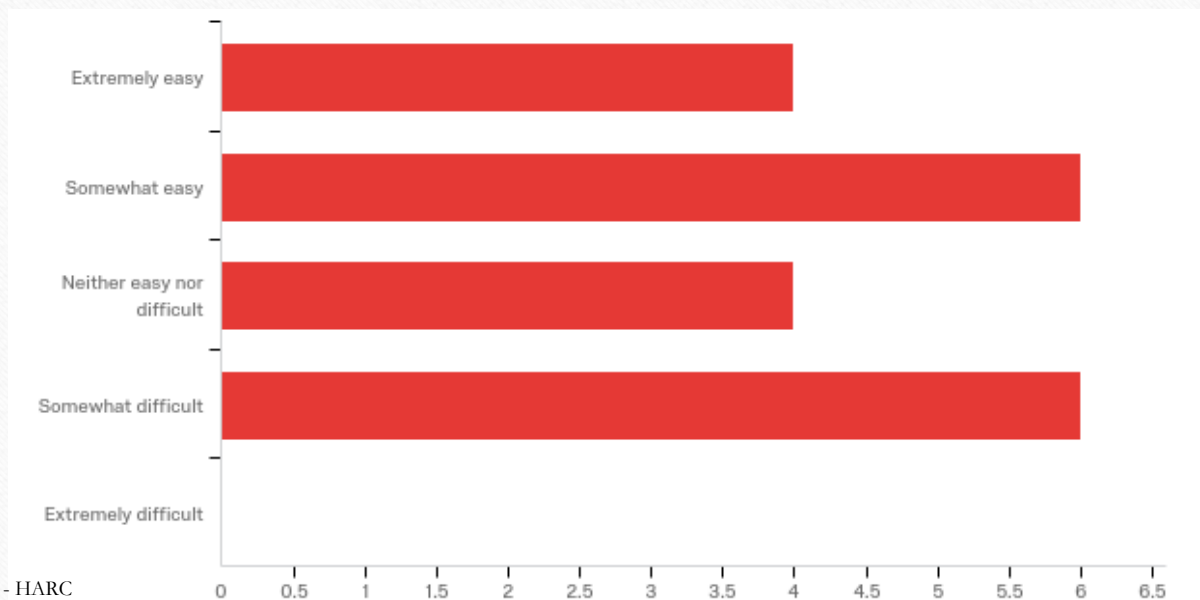
# Email survey

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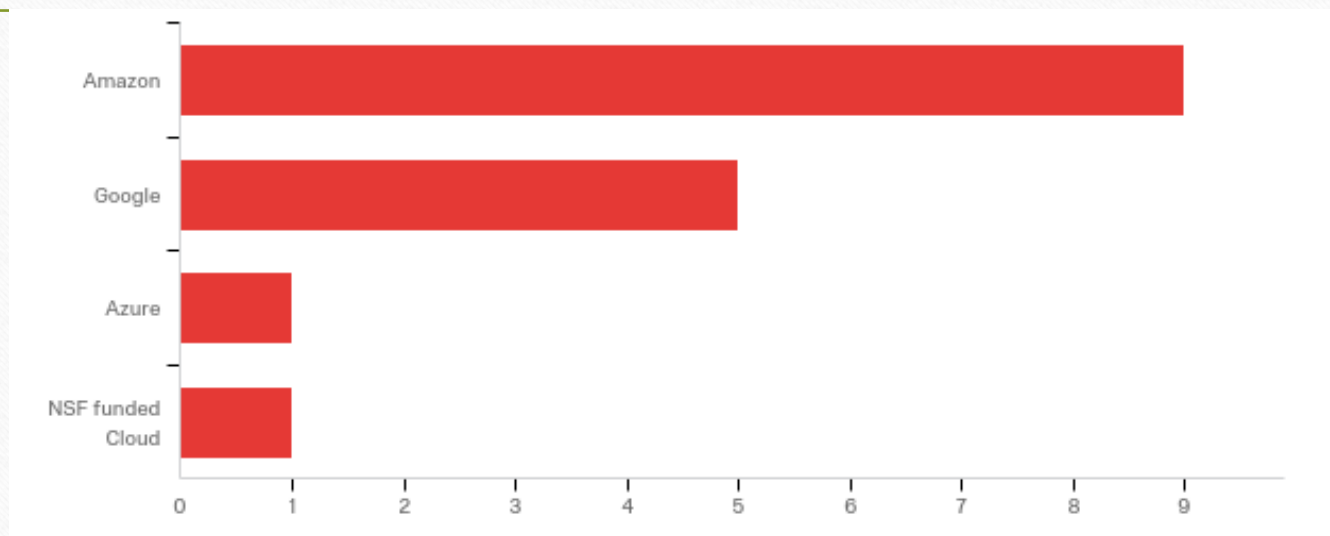
- Target: HPC users
- 5 questions, anonymous, summer 2019
- 20 valid responses
- NSF grants: key word has “Cloud” - 18

# 1. How easy is it to obtain the resources that you need for doing research (computing, network, storage)

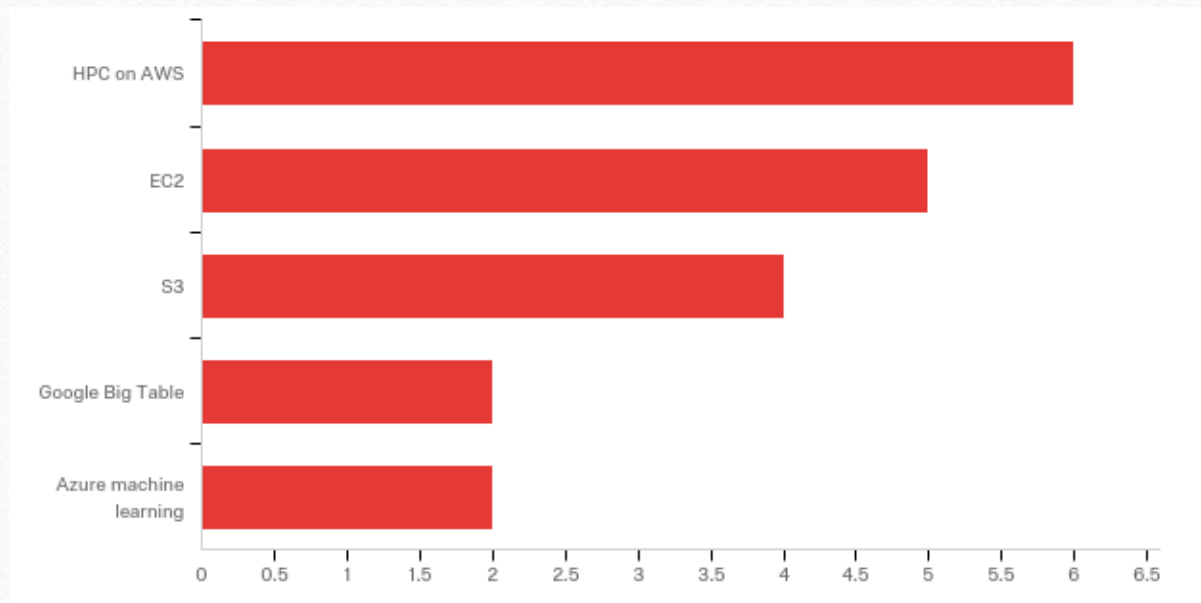
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## 2. Have you used any Cloud resources for your research

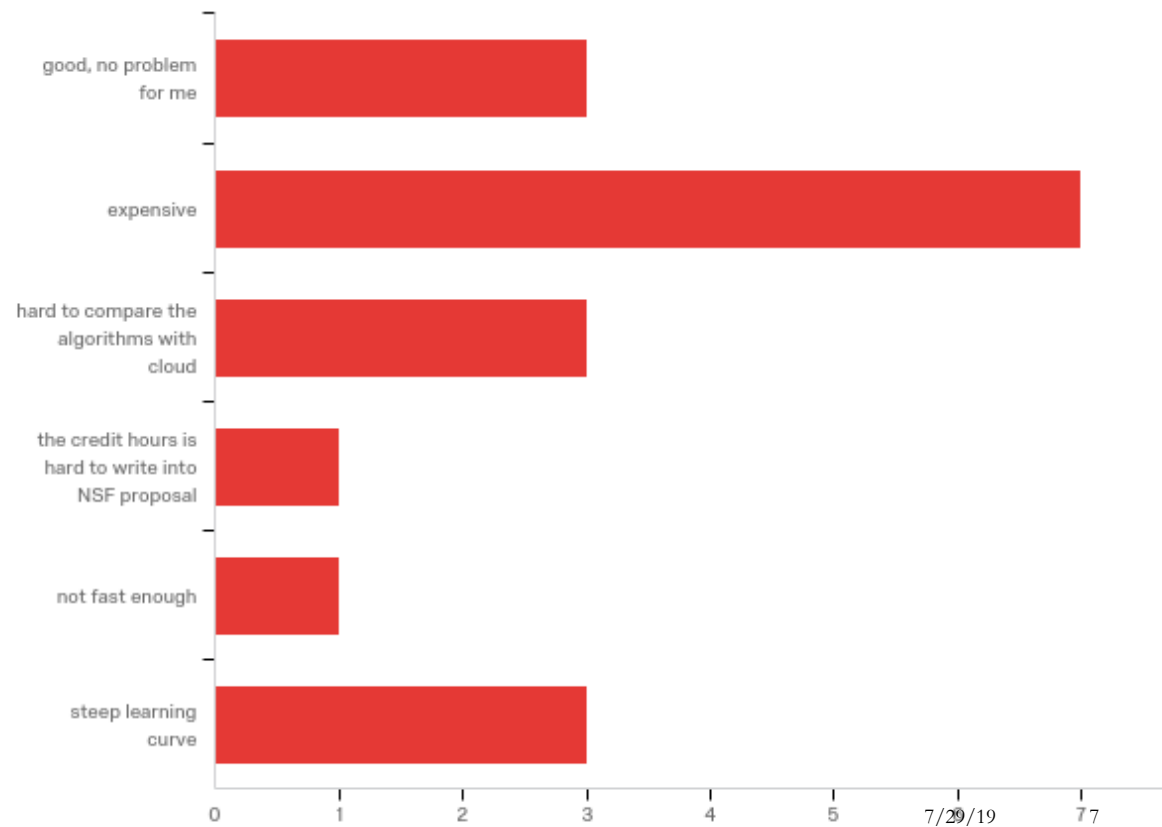


### 3. What specific services you have used?

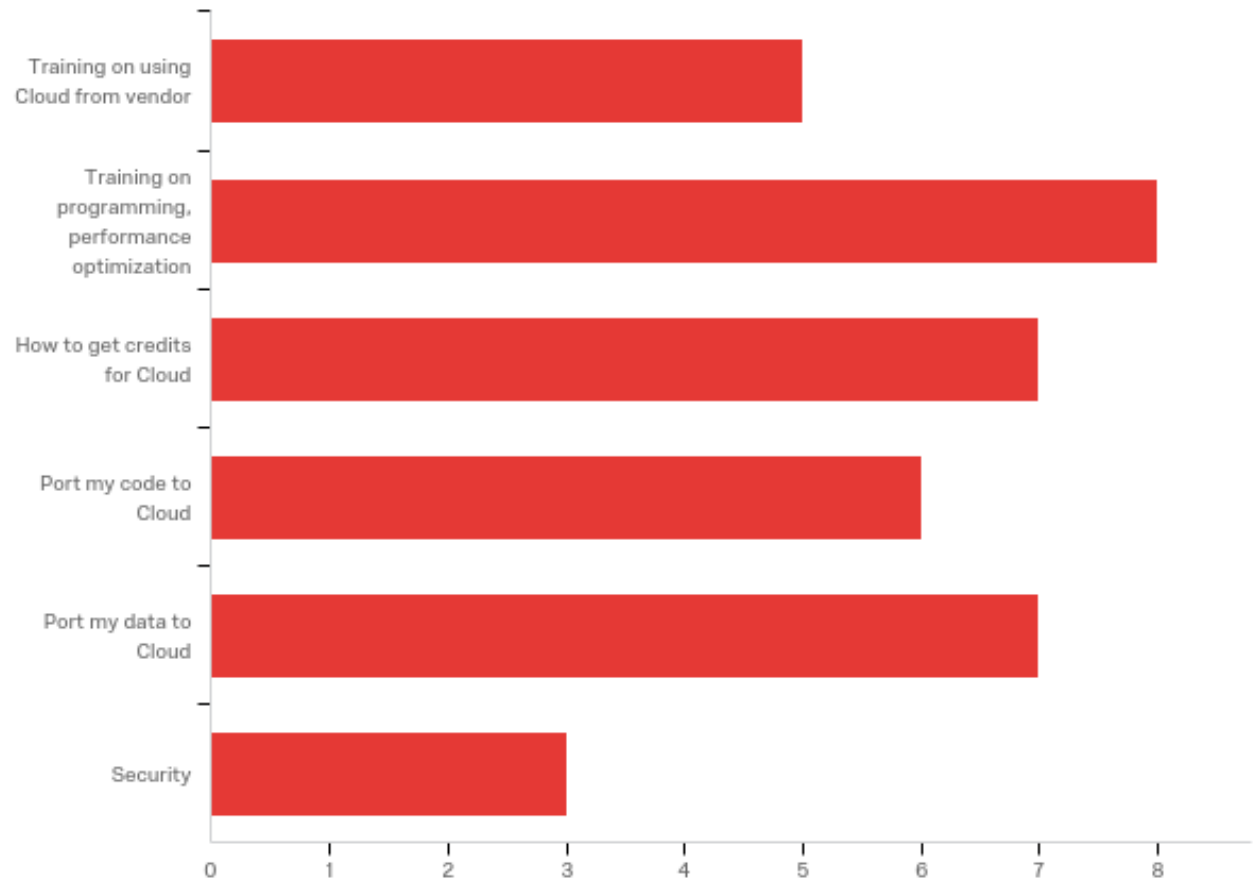


## 4. What are your experiences with them?

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## 5. What support would you like to get to better your research with Cloud?





# Consultations

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- Biweekly HPC user consultations
- Special consultations
  - PIs of NSF and professors

# Gaps in adopting Cloud for research

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- Users are not system admin
- Big data transfer is slow
- Real-time response is difficult
- Performance is unpredictable when model is trained on the Cloud
- If PIs buy physical machines, it is much easier to write the cost into proposals
- Bias in renting Cloud providers' services
- Change the source code of software in the Cloud is unnatural
- Cloud is like a black box

## What researchers like about cloud

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- High-throughput computing (HTC) application
- Data sharing with remote collaborators
- Avoid restricted resources on on-premise clusters
- New experimental hardware

# Discussion and future work

- Cloud is good for domain scientists other than computer science or computer engineering researchers to use it

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  - Optimal cost for getting a result for an experiment
  - Not a transparent and controllable environment
- Training/support from vendor are very important
  - IT usually does not have special roles for Cloud research support
- Future work
  - Targeted survey
  - Help researchers in code and data porting to understand the procedure and best practices.

Thank you

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Thank you Brian Voss, Craig Stewart, IU PTI, GT  
PACE

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