

Research Computing in the Cloud  
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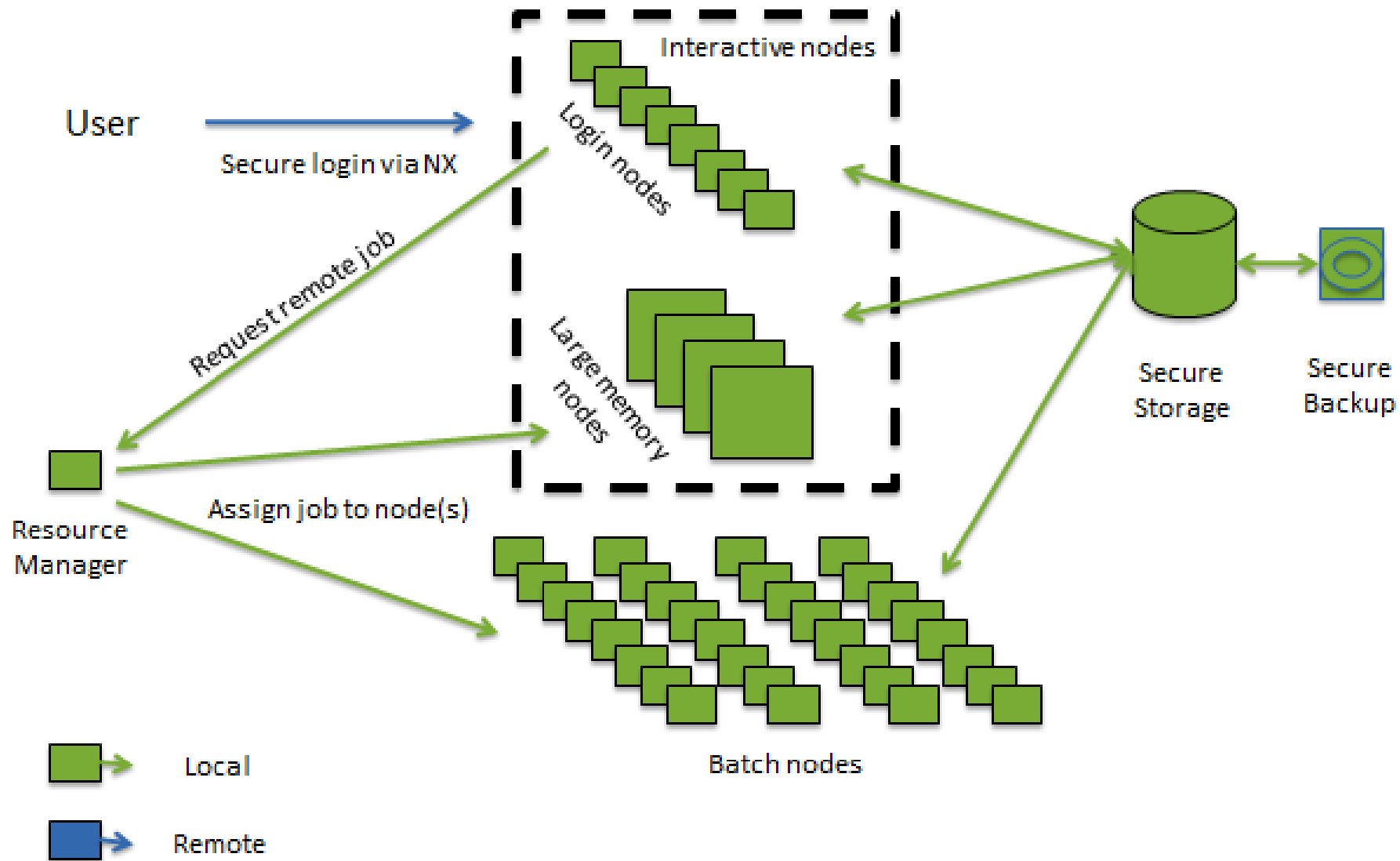


# Motivation

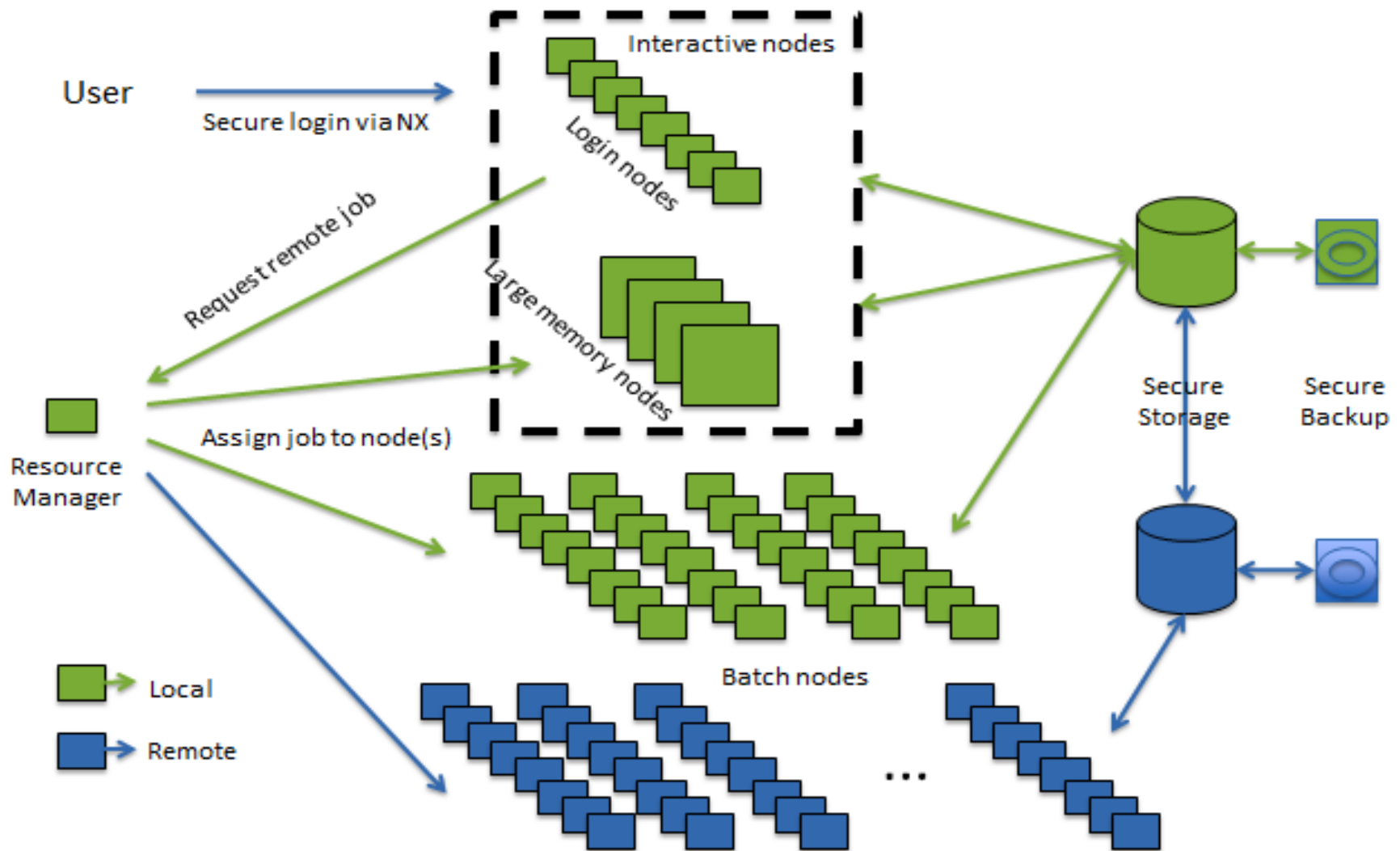
## Research Computing Environment

- Desire to refocus staff technical efforts
- Occasional need to scale resources
- Keep costs flat or reduced
- Architecture allows gradual transition
- “Embarassingly parallel” batch computing ideal

# RCE architecture



# Hybrid RCE cloud architecture



# Contributions

- Hybrid cloud resource management software
  - Expand and contract cluster size “elastically”
- Networking with the Amazon cloud
  - Establish Virtual Private Clouds (via VPNs)
  - Leverage Internet 2 connection
- Generalizing system administrative infrastructure

# Next steps

- Put batch-cloud into production
- Transition other RCE tiers into cloud
- Expand to other private and public clouds
  - e.g., Odyssey, XSEDE, other cloud vendors

# Takeaways

- Using the cloud for your domain
  - Evaluate whether cloud resources make sense
  - Evaluate existing tools to do what you need
  - Talk to and leverage Harvard cloud community