

NSFCLOUD EDUCATION BREAKOUT



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OUTLINE

- Requirements Suggestions
- Example Classes/Exercises
- Guidance



REQUIREMENT SUGGESTIONS

- **Basic features**
 - Isolation – so students can break things without hurting anyone else
 - System level hardware access, e.g. VM-level access, introspection
 - Predictable, measureable environment
 - Minimal setup time, good startup documentation



REQUIREMENT SUGGESTIONS

- Collaborations, community development and support
 - Interfaces similar to other systems used for education, e.g. GENI
 - Lessons learned from GENI
 - Portability between NSFCLOUD/commercial cloud services like AWS
 - Shared materials/modules/exercises, both from the facilities and contributed by community
 - TA/instructor training sessions
 - Community forums for educators
 - Good data sets, benchmarks, course modules for educational exercises
- Tie in to SIGCSE, GENI, SC, NSDI etc. related educational events, conferences, planning
- Community events for NSFCLOUD community (perhaps co-locate with something else? SC, NSDI BOFs?)



REQUIREMENT SUGGESTIONS

- Integrated course management console
 - control/dole out resources
 - Provision starting images, update management
 - Testing/grading support
 - Hierarchical scheduling and access support (faculty/TA/student):
 - team vs. individual allocations
 - Account monitoring capabilities
 - Control errant student jobs
 - Instructor management of scheduling/deadlines/allocations



REQUIREMENT SUGGESTIONS

- Resource allocation
 - Short turn-around allocation time
 - Longer-term resource allocation for semester courses
 - Sufficient capacity to handle class deadlines, capacity
 - Support for scalability exercises



EXAMPLE CLASSES/ EXERCISES

- VM development
- Eucalyptus deployments
- Cloud design classes
- Classes that use FPGAs/Accelerator/specialized hardware
- Large classes with high latency requirements
- Performance engineering
- Data center networking classes



GUIDANCE

- Focus on things that can't be run on commercial or other mid-scale NSF platforms
 - That is, leverage access to XSEDE, AWS, etc., where possible, and use CloudLab resources where they are unique

