Emulab Portal to PlanetLab

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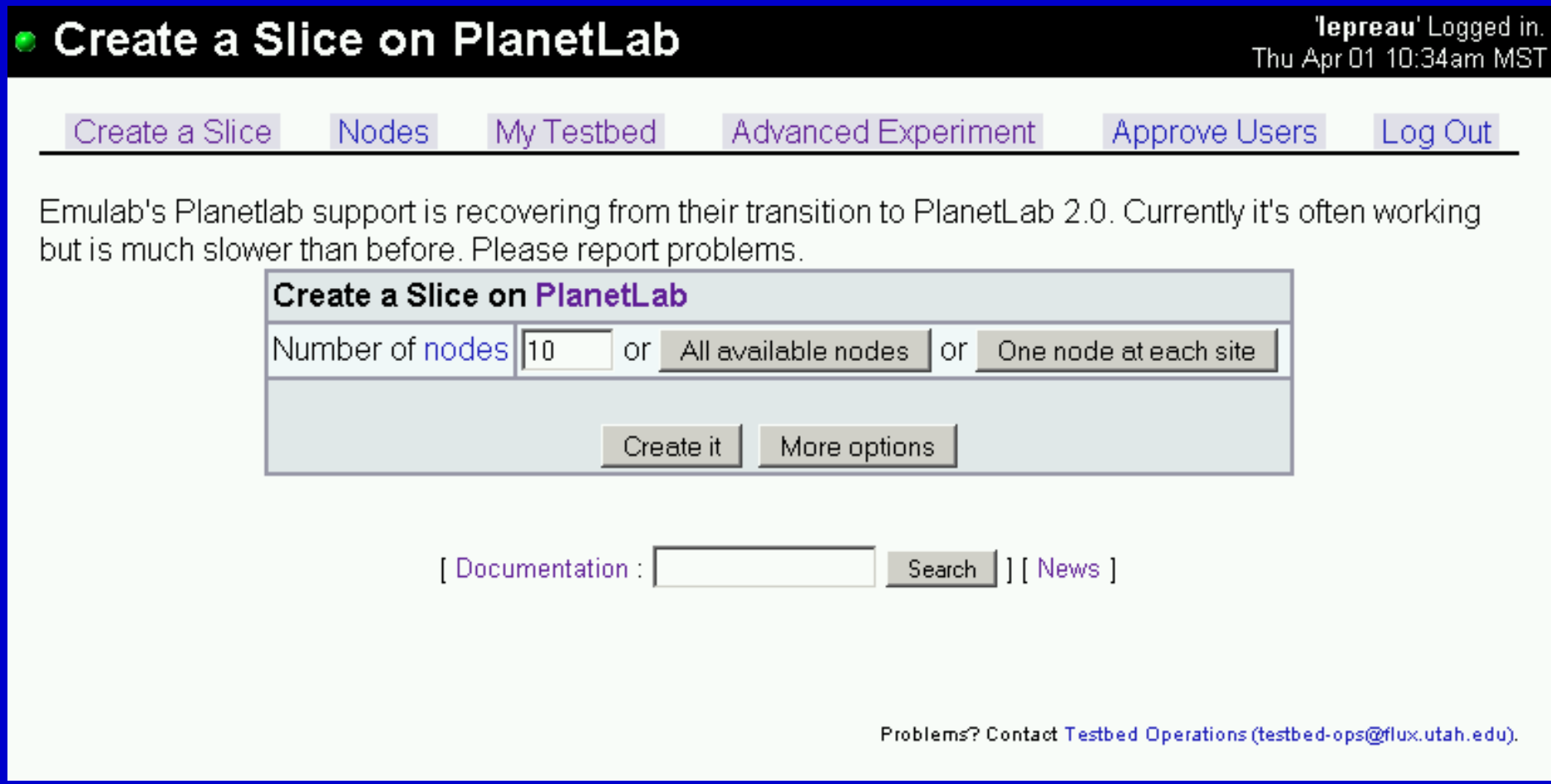
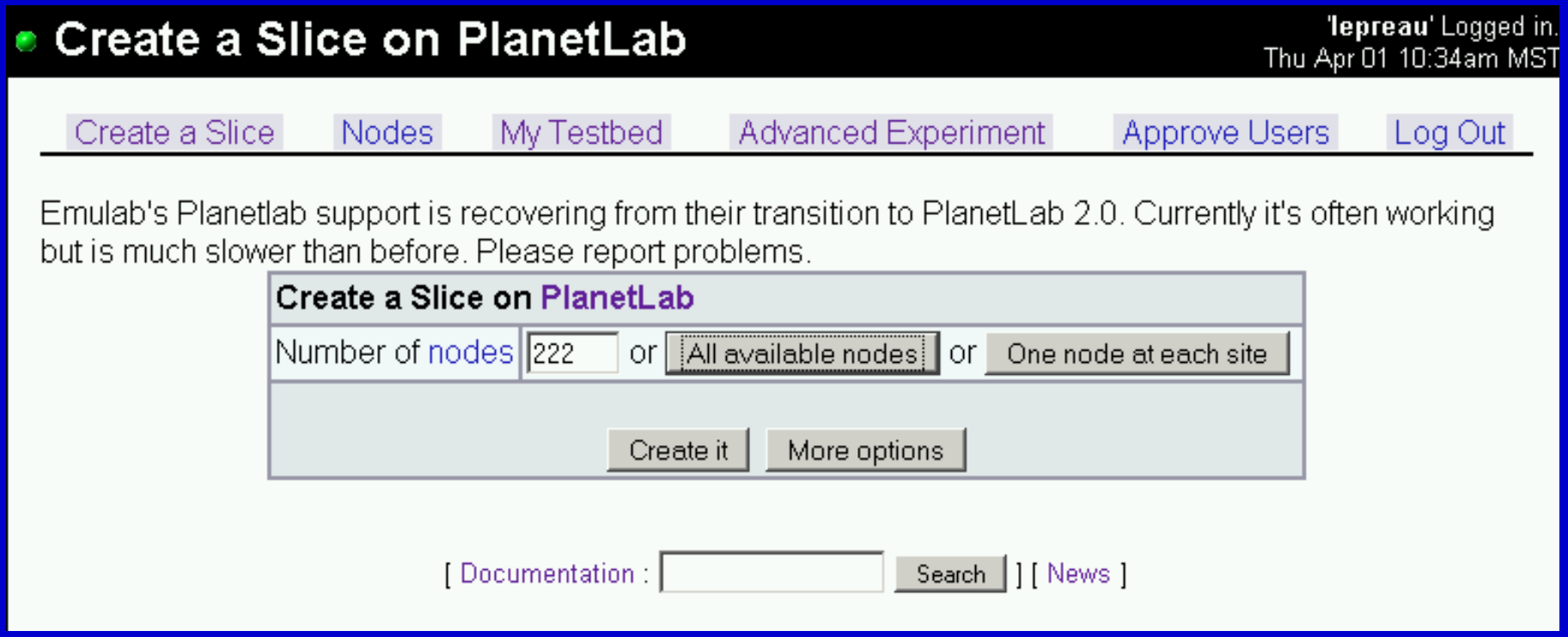
PlanetLab Workshop, HPLabs

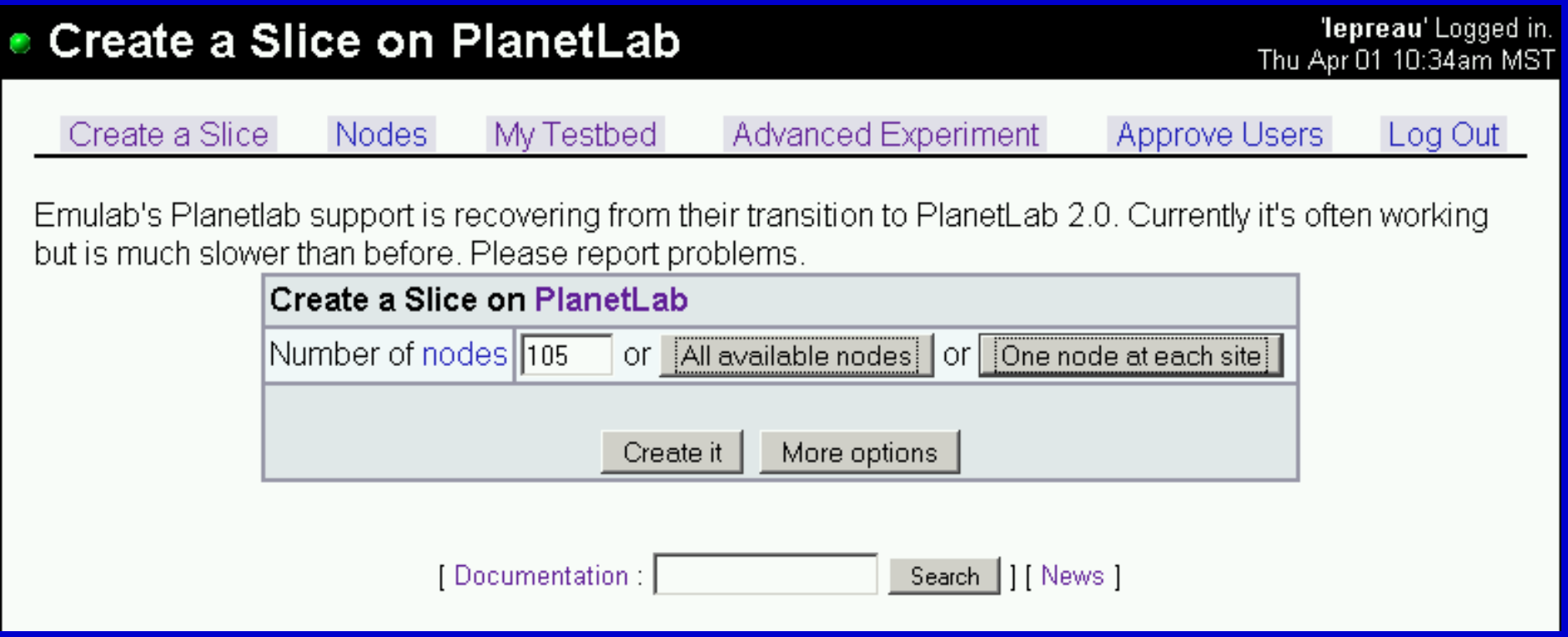
Emulab "EZ" Web Interface



Request all Available Nodes



Request all Available Sites



Web Interface w/ options

Create a Slice on PlanetLab - Advanced Form

'lepreau' Logged in.
Thu Apr 01 10:33am MST

Create a Slice | Nodes | My Testbed | Advanced Experiment | Approve Users | Log Out

Emulab's Planetlab support is recovering from their transition to PlanetLab 2.0. Currently it's often working but is much slower than before. Please report problems.

Basic Options	
Number of nodes	222 or All available nodes or One node at each site
Advanced Options	
Type of PlanetLab nodes:	Any PlanetLab node (222 available at 105 sites)
Estimated CPU and memory use:	Very Low
Retry until nodes with sufficient resources are available:	☐
Proceed even if some nodes fail to set up:	☑
Auto-terminate slice after:	never Hours
Files to Install and Maintain	
Tarball(s) to install:	
RPM(s) to install:	
Command to run on startup:	
Submit Reset	

You can also take a look at the widearea node link metrics

Select by last-mile type

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Advanced Options	
Type of PlanetLab nodes:	Any PlanetLab node (222 available at 105 sites)
Estimated CPU and memory use:	Any PlanetLab node (222 available at 105 sites) Nodes on DSL lines (0 available at 0 sites) Commodity Internet, North America (31 available at 12 sites) Outisde North America (48 available at 26 sites) Internet2 (143 available at 68 sites)
Retry until nodes with sufficient resources are available:	
Proceed even if some nodes fail to set up:	☑
Auto-terminate slice after:	never Hours
Files to Install and Maintain	
Tarball(s) to install:	
RPM(s) to install:	
Command to run on startup:	
Submit Reset	

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State Mgmt, Startup Cmd

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Basic Options	
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Advanced Options	
Type of PlanetLab nodes:	Any PlanetLab node (222 available at 105 sites)
Estimated CPU and memory use:	Very Low
Retry until nodes with sufficient resources are available:	☐
Proceed even if some nodes fail to set up:	☑
Auto-terminate slice after:	52 Weeks
Files to Install and Maintain	
Tarball(s) to install:	/tmp http://www.cs.utah.edu/~lepreau/fooby.tar.gz
RPM(s) to install:	
Command to run on startup:	/tmp/fooby/lsit
Submit Reset	

You can also take a look at the widearea node link metrics

Emulab's Planetlab Services

- Resource discovery
- Resource monitoring
  - Nodes, e2e health, pair-wise paths
- Resource allocation
  - Site, type, load, disk space
  - (Pair-wise path attributes)
  - Port space

Node/slice mgmt ("environment service")

Node Initialization

- Elab state, per-user state
- Startup command

- Maintenance and monitoring
  - State (programs, accounts, keys)
  - Slice/nodes
- Mechanisms:
  - Emulab central
  - Service slice (caching, bootstrapping, health)

More services

- Control service
  - Node, slice
  - Reboot, (Restart), update state, update accounts
- Naming service
  - Virtual (DNS) or physical
- Slice creation admission control and optional queuing
- XMLRPC interface

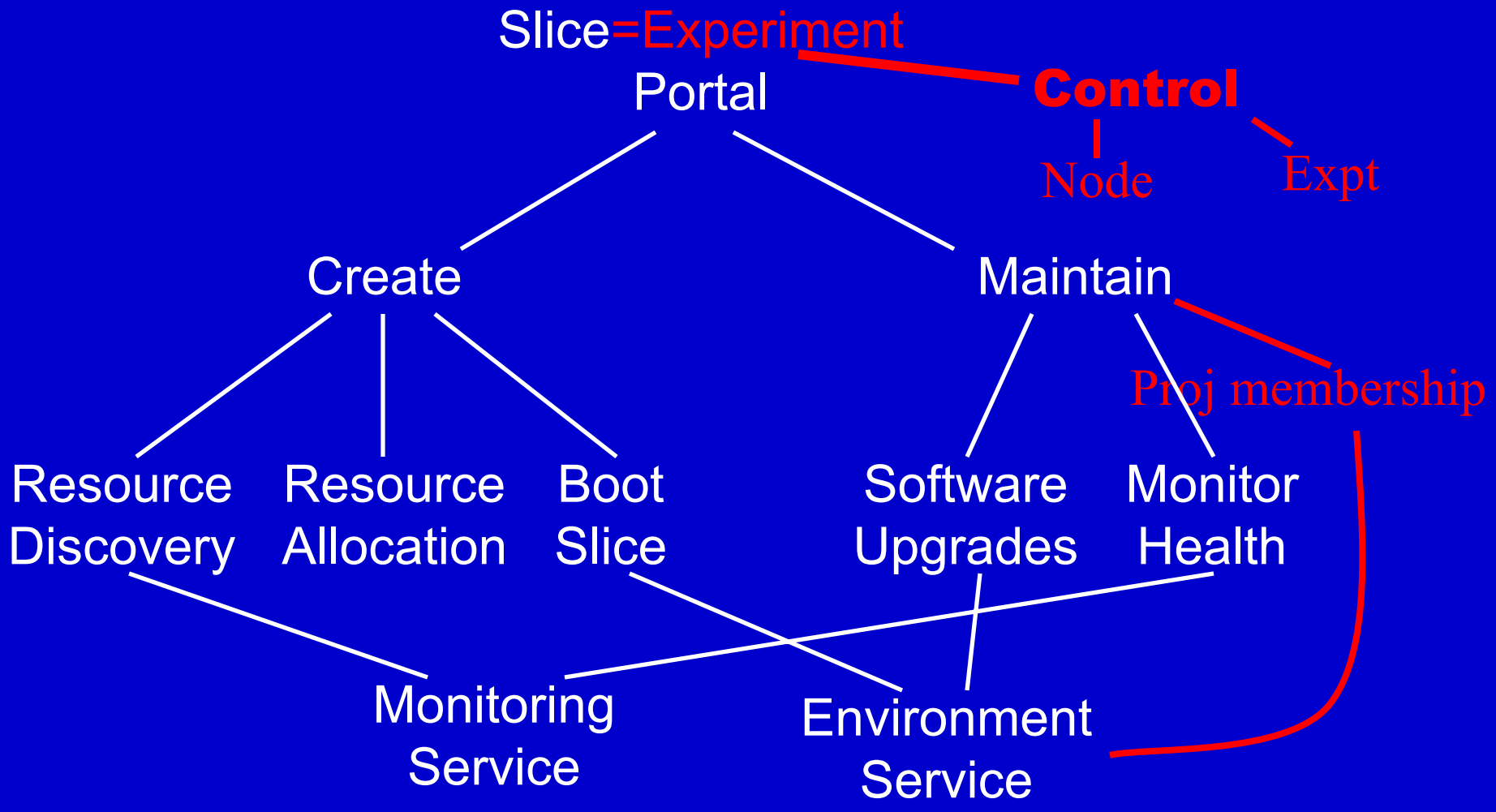
Future

- Easy:
  - Auto-grow slice to all (healthy) nodes
  - SFS
  - Finer-grain programmatic interface
- Moderate
  - Plab-prime in Elab (for testing)
  - Event system
- Hard:
  - Swap in/out slice

One Lesson and Issues

- Lesson: *only* end-to-end "test" assures node health
- Resource alloc algorithm biases towards distant sites (non-North America)– not representative for small slices?
- Oscillation of node availability
- Need better mechanisms from PlanetLab
  - Direct access to node mgr
  - Access to principal info
- Right services, right APIs for users?
- Cross-broker share/resource mgmt; federation?
- Revocation of shares

In Larry's Taxonomy…



Wireless upcoming…

- Wifi testbed at Rutgers WINlab Emulab
  - 625 node 2 meter array, 802.11[x]
- Wireless nodes at Utah
  - 2 today, 40 soon, ….
  - 802.11, software radio
- Motes and sensors
- Remotely controllable mobile nodes
  - Robots!