Resource Allocation
Infrastructure Services

Slice Portal

Create
- Resource Discovery
- Resource Allocation
- Boot Slice
- Monitoring Service

Maintain
- Software Upgrades
- Monitor Health
- Environment Service
Overview

• Multiple allocators
  – PlanetLab Central (PLC)
  – SHARP
  – Emulab
  – …

• Interfaces
  – PLC (API + GUI)
  – per-node (initially private)

• Evolution
  – centralized $\rightarrow$ decentralized
  – policy-heavy $\rightarrow$ user-specified
PlanetLab Central API

create_slice(name, credentials)
delete_slice(name, credentials)
set_state(name, boot_state, credentials)
set_resources(name, resource_spec, credentials)
instantiate_slice(name, nodes[], credentials)

boot_state = {ssh_keys, boot_url}
resource_spec = {share, duration}
Shares

• Relative Shares (first step)
  – default shares per site (e.g., 100)
  – bonus shares for additional contributions
    ▪ additional connectivity (+50)
    ▪ BGP feed (+25)
    ▪ continuously running service (+25)
  – max shares per site (e.g., 200)
  – PI assigns fraction of site’s shares to each slice

• Canonical shares (next step)
  – small set of standard “sizes”
Node Manager API

rcap ← acquire(rspec)
bind(name, rcap)
rcap ← reissue(rcap)
rcap[ ] ← split(rcap, rspec[ ])
rcap ← merge(rcap[ ])

rspec = {start_time, stop_time, priv}
priv = {cpu, bw, disk, shares, ports,...}