Resource Allocation

Infrastructure Services

Slice
Portal

Create

Maintain

Resource
Discovery

Resource
Allocation

Boot
Slice

Software
Upgrades

Monitor
Health

Monitoring
Service

Environment
Service

2
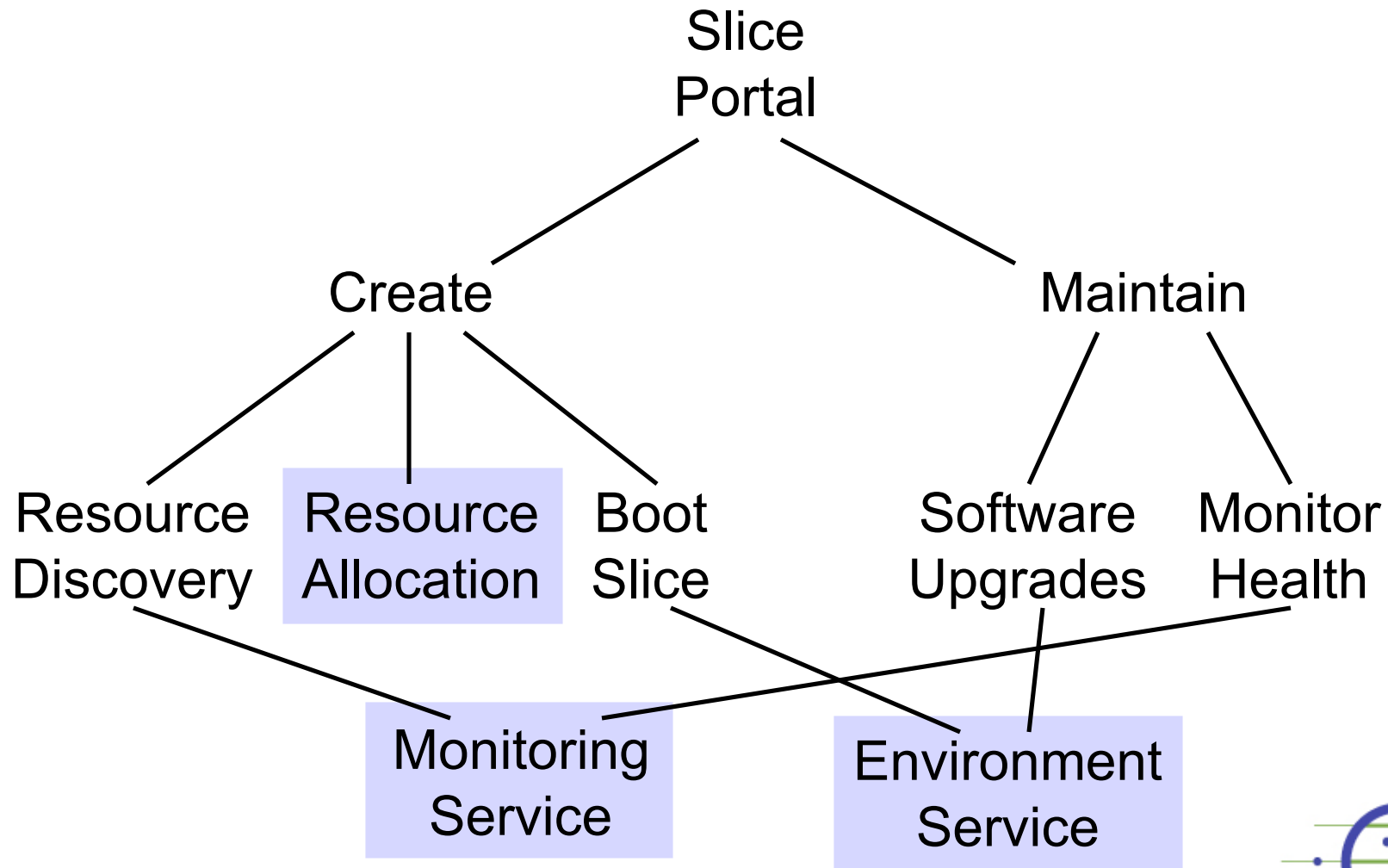
PLANETLAB

Overview

- Multiple allocators
  - PlanetLab Central (PLC)
  - SHARP
  - Emulab
  - …

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

- Evolution
  - centralized → decentralized
  - policy-heavy → user-specified

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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}

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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"

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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,…}

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