



PlanetLab Current Status

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Overview

- PlanetLab is about 5 months old
- Development primarily here and Princeton
- Research topics at Berkeley only just emerging
- This talk is a overview of where we're currently headed.
- Slightly Mothy-centric since Brent is ill
 - But go talk to him!

Deployment

- 101 nodes, 42 sites
- Line of University volunteer sites
- Some Industrial research volunteers
- Budget for colo centers
- Boot CD in development for next phase

Research Agenda

- Very early stages
 - S/w development, operations and support moving (slowly) to DSL team
- Current small-ish projects here:
 - Resource brokers
 - DHT benchmarking
 - InfoSpect monitoring
 - Spread-spectrum storage
 - Deployment languages
 - Economic resource management

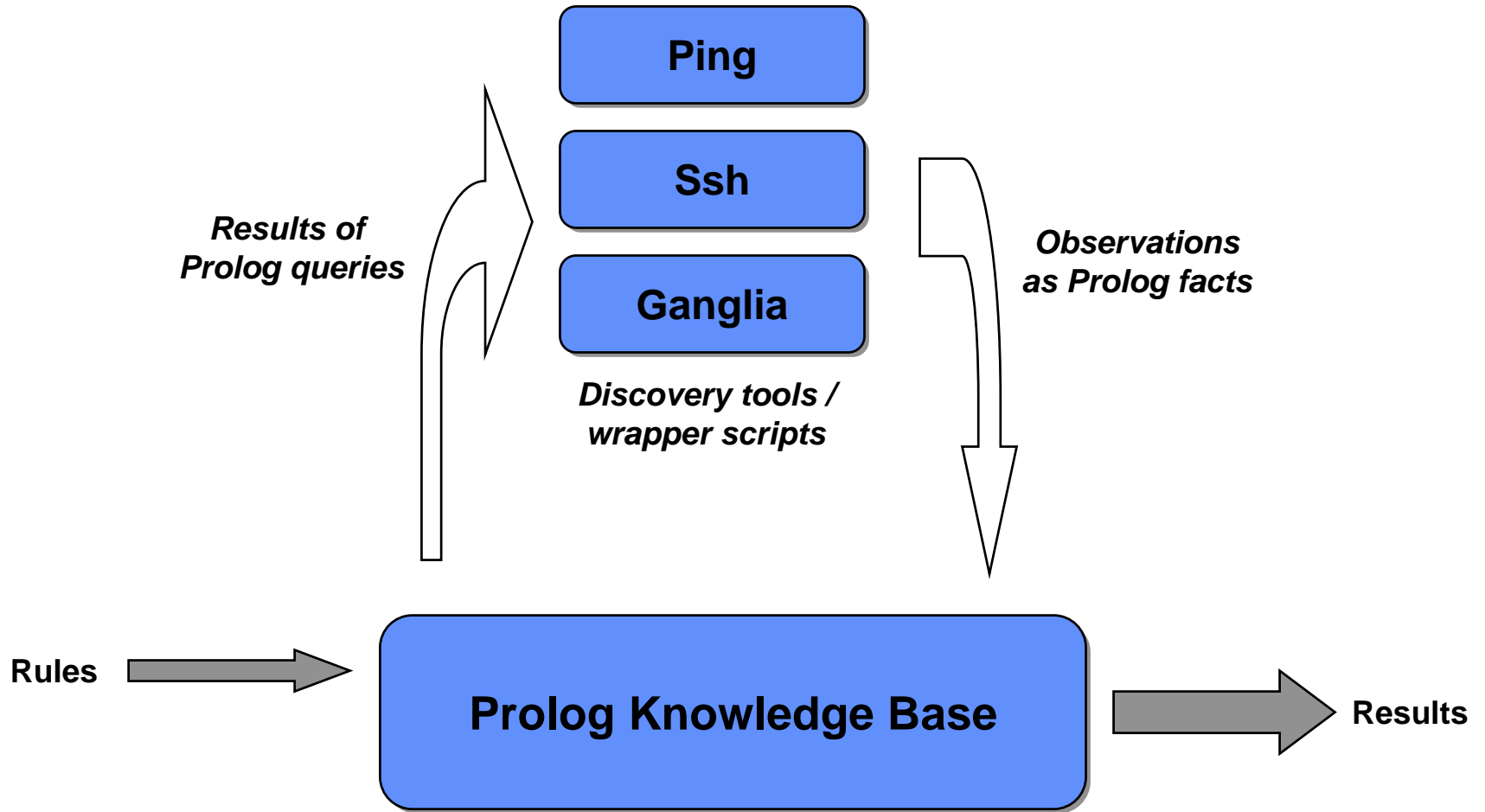
Resource Brokers / Slices

- Brent, Mothy, Larry Peterson, etc.
- IPTPS: *“Slices: Providing a Stable Core for Peer-to-Peer Applications”*
- Key PlanetLab rsrc allocation issue
 - How does an application request a slice?
 - How is it allocated?
 - How does the process span multiple providers?
 - How are allocations verified?

DHT Benchmarking

- Mothy, Sean Rhea (Oceanstore)
- IPTPS: “*CANs Need Application-Driven Benchmarks*”
- Aims:
 - Design good benchmarks for DHTs/CANs/DOLRs
 - Get real results using PlanetLab
 - Demonstrate the differences between systems
- Currently: Tapestry, Chord
 - Pastry, Strawman in process

InfoSpect



InfoSpect monitoring

- Mothy
- SIGOPS EW: *“InfoSpect: using a Logic Language for System Health Monitoring in Distributed Systems”*
- Use of Prolog engine for PlanetLab fault diagnosis
 - “Axioms” prime the system
 - Small “driver scripts” discover information
 - Inference rules encode assumptions
 - Queries return anomalous conditions

InfoSpect example

- Trivial example:

```
badstuff(Problem,Site) :-
```

```
    db_host(Site,DbHost,DbIp,_,_),
```

```
    ssh_greeting(DbIp,_),
```

```
    ping_failed(DbIp),
```

```
    swritef(Problem, '%w (%w) is filtering pings (and possibly  
other stuff)', [ DbHost,DbIp ]).
```

- About a dozen of these tests and growing.
- Runs continuously
 - Somewhat depressing results ☺

Spread-spectrum storage

- Mothy + Steve Hand (Univ. Cambridge)
- Remember interview talk 😊
- Transient, “soft capacity” storage for PlanetLab
 - User software distribution
 - Log file / results collection
- Other calls for storage services
 - Oceanstore, SFS,

Deployment languages

- Mothy, and whoever
- Appropriate languages for expressing the deployment of PlanetLab applications
 - Apply declarative techniques
 - Borrow ideas from component languages
 - Possible synergy with macroprogramming
- Just a wild and crazy idea right now

Economic Resource Management

- Brent, et.al.
- Policies built over slice model
 - Resource consolidators
 - etc.
- Lots of code being written
- Please ask Brent when he's recovered
 - if he were here he would say a lot more.

Other work we know about:

- UCB: Oceanstore, ROC
- UWash scriptroute
- Duke AC/DC (adaptive overlays)
- Princeton: RON routing service
- Cambridge: PlanetProbe
- Rice: Topology-aware Pastry
- CMU: launching DoS attacks
- ...and many more

Summary

- Still “finding our feet” research-wise
- Lots of issues coming out of deployment
- Beginning to engage UCB students more
- Reasonably gaggle of research directions