Managing a New Internet

Fundamental functions for a mobile, wireless, serverless testbed

Wade Gobel, University of California, Santa Cruz: SURF-IT 2009

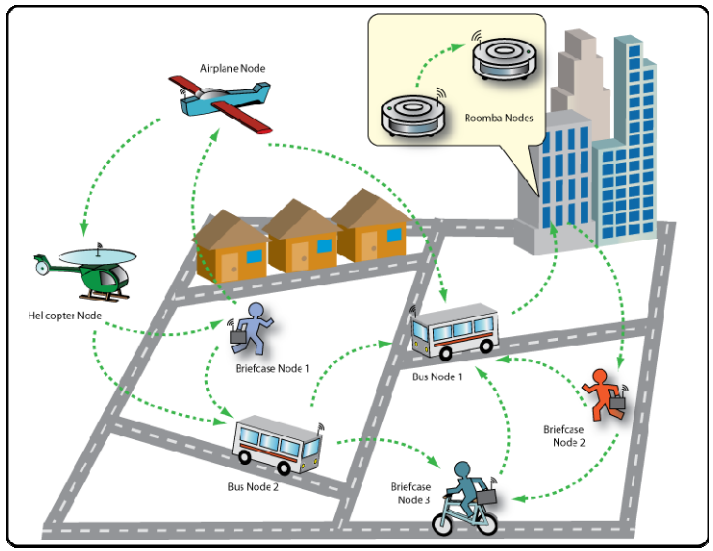
The SCORPION Testbed:

Santa **C**ruz m**O**bile **R**adio **P**latform for **I**ndoor / **O**utdoor **N**etworks

- Modern internet routing depends on servers
- If a server fails, large areas may lose service
- SCORPION is a wireless network that does not require a server
- In this network, there are four types of nodes:

Briefcases, Roombas, buses, and an airplane

- SCORPION helps to test new serverless routing protocols using real-world node motion



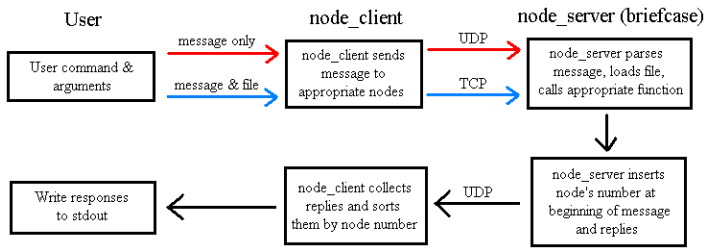
Problem: Communicating with the Briefcases

- The only way to access a briefcase is through a secure connection
- Such a secure connection is slow to establish
- Accessing multiple briefcases requires multiple secure connections
- Changes can only be applied to one briefcase at a time
- Because of hardware sensitivity, closing a briefcase may turn it off
- Difficult to check all nodes are operational without keeping them open
- **Goal**: Access and modify briefcases using simple & fast function calls

Functions of Management Tool

- `nodels`
  Ping available nodes
- `nodediff`
  Show difference between local and remote files
- `nodecron`
  Append list of scheduled tasks to node's crontab file
- `noderun -c`
  Run a command-line command
- `noderun -s`
  Run a provided script
- `nodeupdate`
  At node startup, rsync to local laptop if any found

Program Flow and Protocols



Acknowledgements
National Science Foundation: Sponsor of SURF-IT
Katia Obraczka: Faculty advisor
James Koshimoto: Graduate advisor