

A Gentle Intro to the Abone

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joint work with SRI

o **Goals**

- o Realistic testbed for active nets experiments
 - Execution Environments (EEs)
 - Active Applications (AAs)
 - Active Node Operating Systems (NodeOS)
- o Scalable to $O(100-1000)$ nodes
- o Security planned in

Active Nets Backbone

- o Assembled from existing nodes & links
 - CAIRN nodes (& links)
 - Nodes provided by other researchers
- o Diverse platforms
 - Linux, Solaris, FreeBSD now
 - NodeOS's soon



Core Nodes vs Edge nodes



o Core nodes

- Public resource for EE and AA developers
- ``Always'' available - (monitored)
- Permanent EEs
 - Fixed topologies
 - Available for AA developers

Core Nodes vs Edge nodes

o Edge nodes

- Private, "owned" by researcher
- No availability requirement
- Dynamic addition/removal from EE topology
- AA or EE developer starts local copy
- AA developers may need private sharing arrangements for experiments

o **Schedulable nodes**

- o Utah Testbed model
 - Set of machines for experiments
 - Reservable for blocks of time
 - Generally one researcher at a time
- o CAIRN model similar

Anetd

- o Management software for the ABone
 - Active Nets Daemon (anetd)
 - Anetd client, sc
- o NodeOS functions
 - Packet forwarding

Security

- o Anetd controls who can run EEs ...
 - Public key cryptography
 - ACL on each node
- o ... and what code can be run
 - Trusted code server list (TCL)
- o Java security for Java EEs

-ABOCC

- o ABOne Coordination Center (ABOCC)
 - Register nodes, EE developers
 - Maintain master ACL,TCL,config files
 - Assign numbers
 - Monitor status of ABOne and permanent EEs

Status

- 36 running nodes, Linux, FreeBSD, Solaris
- o 2 permanent EEs
 - ASP
 - ANTS
- o Various monitoring tools

o **Current work**

- o Auto-update script for anetd
- o ABone shell
- o Netiod - Network I/O Daemon
- o DANTE - Dynamic EE Topologies

Contacts

- o ABone web sites
 - <http://www.isi.edu/abone>
 - <http://www.csl.sri.com/activate>
- o ABone issues mailing list
 - activenets_abone@itcc.ukans.edu
- o ABOCC mailing list
 - abocc@isi.edu