NS Fundamentals (contd..)

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Outline

- Ns fundamentals – Part I (by Chen)
- NS fundamentals – Part II
  - NS Internals
Ns Internals

- Tcl commands translates into
  - series of object creation
  - plumbing of these objects
- Step-by-step review of how each network component gets set up in ns
Network Topology: Node

```
set n0 [ns_ node]
```

```
Set ns_ [new Simulator –multicast on]
Set n1 [ns_ node]
```
Node Addressing

- Two basic address styles available: flat and hierarchical
- Default flat address: 32 bits each for node and port id
- Default hier address:
  - 3 levels of hierarchy
  - 10 11 11 or 1 9 11 11 if mcast specified
- Different bit allocation possible for specific hier addresses
Hierarchical Node

ns_node-config – addressing hier
Network Topology: Link

[ns_ duplex-link $n0 $n1 5Mb 2ms drop-tail]
Transport

set tcp [new Agent/TCP]
ns_ attach-agent $n0 $tcp
ns_ connect $tcp $tcpsink

set tcpsink [new Agent/TCPSink]
ns_ attach-agent $n1 $tcpsink
Application: Traffic Generator

set ftp [new Application/FTP]
$ftp attach-agent $tcp
$ns at 1.2 "$ftp start"
Routing

Node entry

entry

Node entry

entry

Port Classifier

Addr Classifier

Classifier

dmux

0

1

Agent/TCP

Application/FTP

enqT

queue

deqT

link

ttl

drophead

drpT
Routing (con’t)
Plumbing: Packet Flow