



M-TCP

Improving TCP Performance over Wireless Links with Periodic Disconnection

CMPT 885-3: SPECIAL TOPICS:
HIGH-PERFORMANCE NETWORKS

April 12, 2002

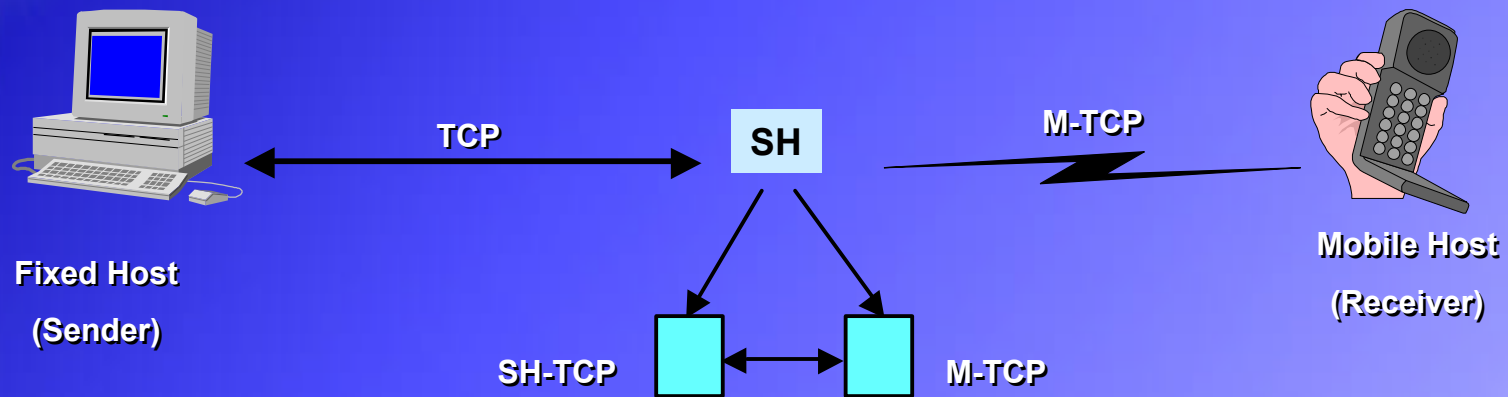
Judy Zhan, Wan Gang Zeng, Zhiwen Lin



Demo Schedule

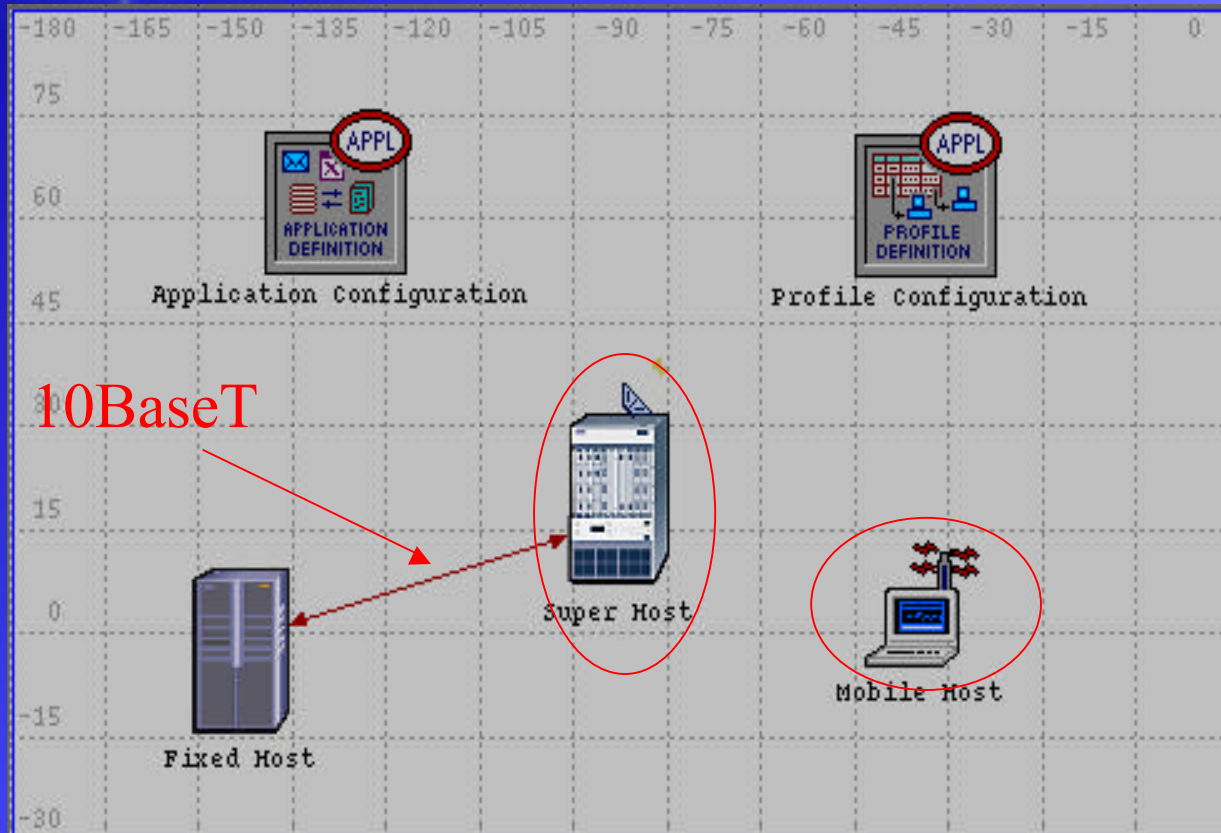
- Brief Introduce of M-TCP
- Topology design of M-TCP in OPNET
- Functions of modified OPNET models
- Detail function blocks
- Simulation results
- Conclusion

M-TCP



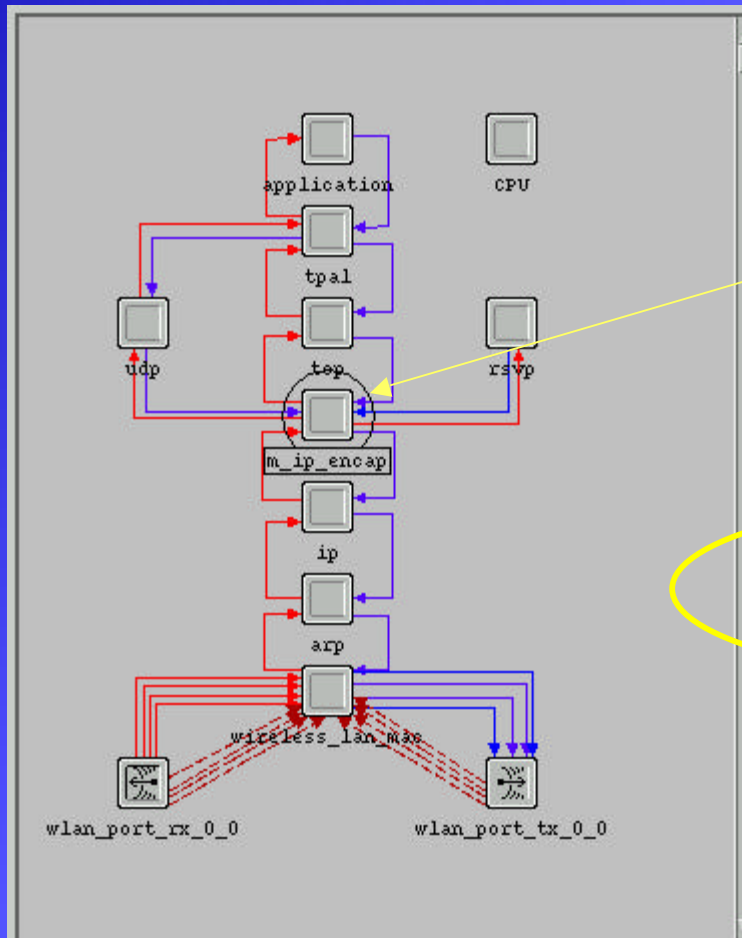
- TCP connection is split at SH
- SH will not ACK FH unless MH does
- SH remains the ACK of the last byte of each segment to isolate the FH from mobile disconnections

M-TCP Topology Design



- FH:
Ethernet Server
- SH:
wlan_enthernet_router
- MH:
wlan_workstation

Process Model at Mobile Host (MH)



Added Function:
Disconnection from network &
Sending reconnection msg

(m_ip_encap) Attributes

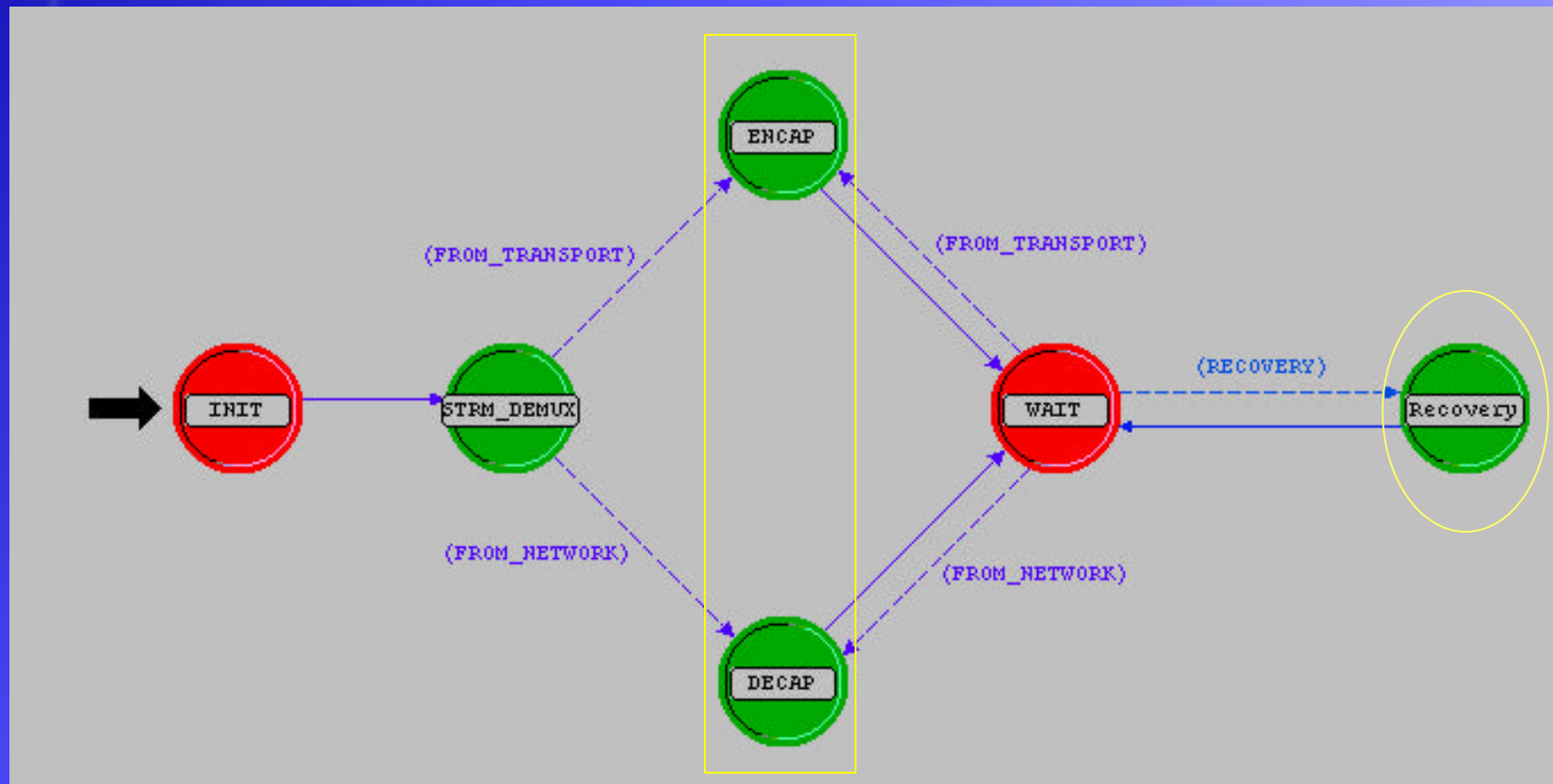
Attribute	Value
name	m_ip_encap
process model	YS_ip_encap_v4
icon name	processor
brokenEnable	1
brokenEndTime	300
brokenStartTime	270
cycleTime	300

Extended Attrs.

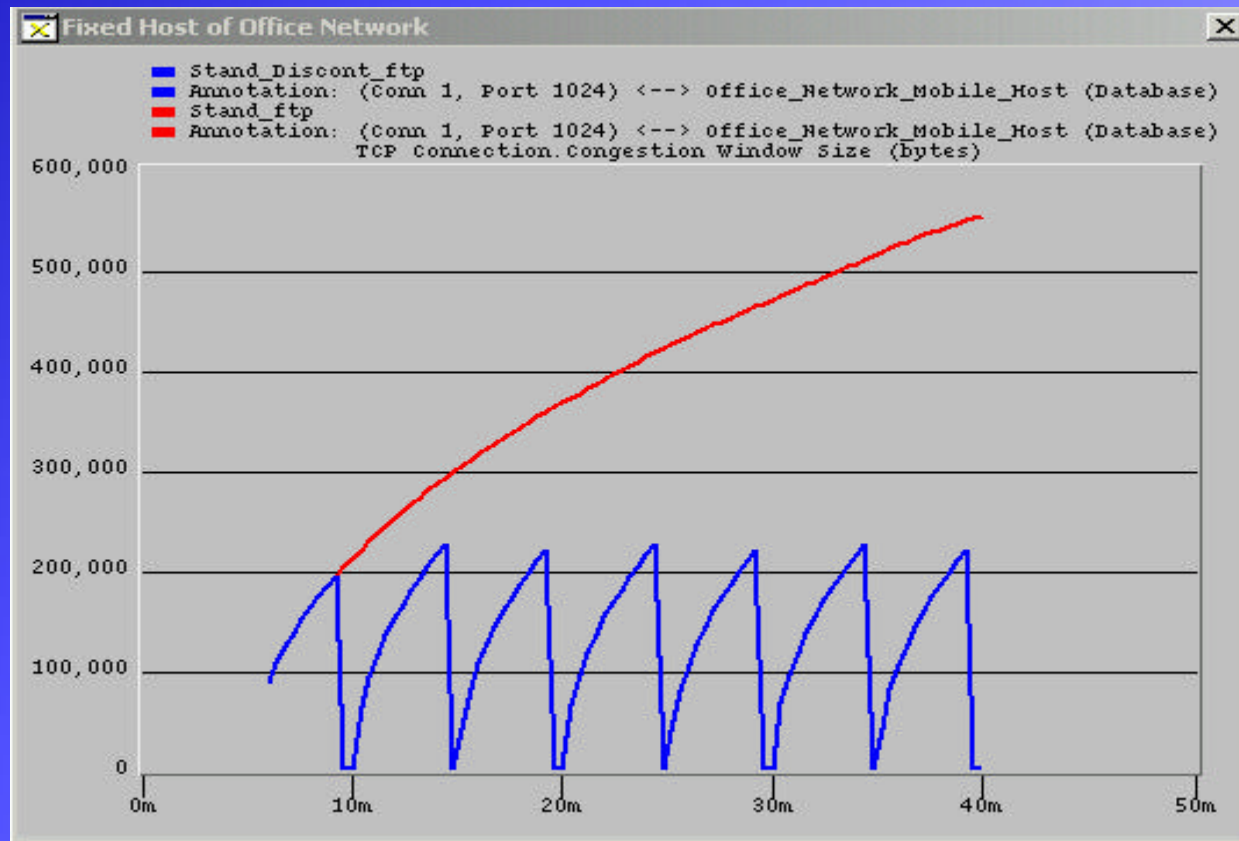
Apply Changes to Selected Objects

Details Promote Cancel OK

Disconnection & Reconnection at MH



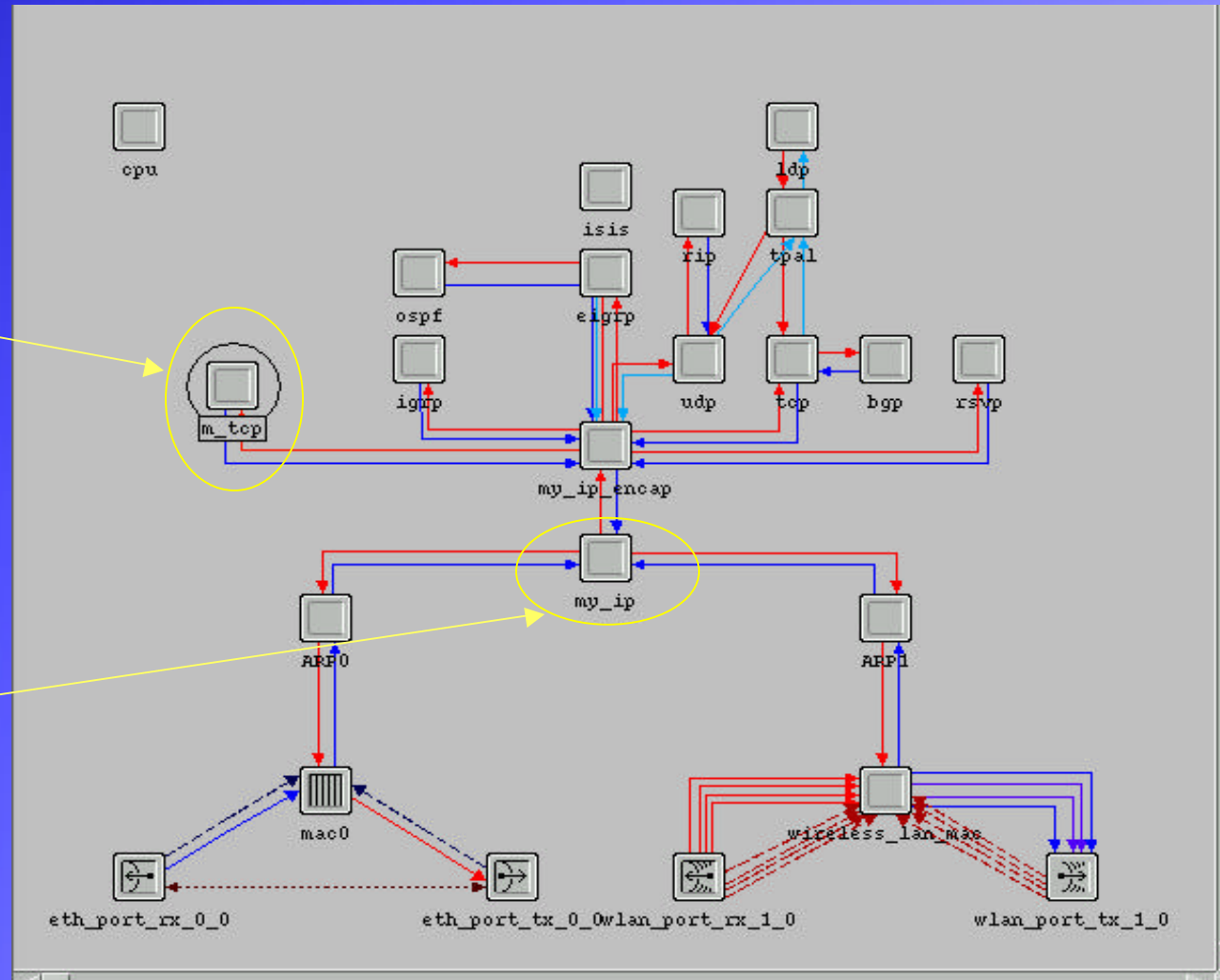
TCP Suffers Periodic Disconnections



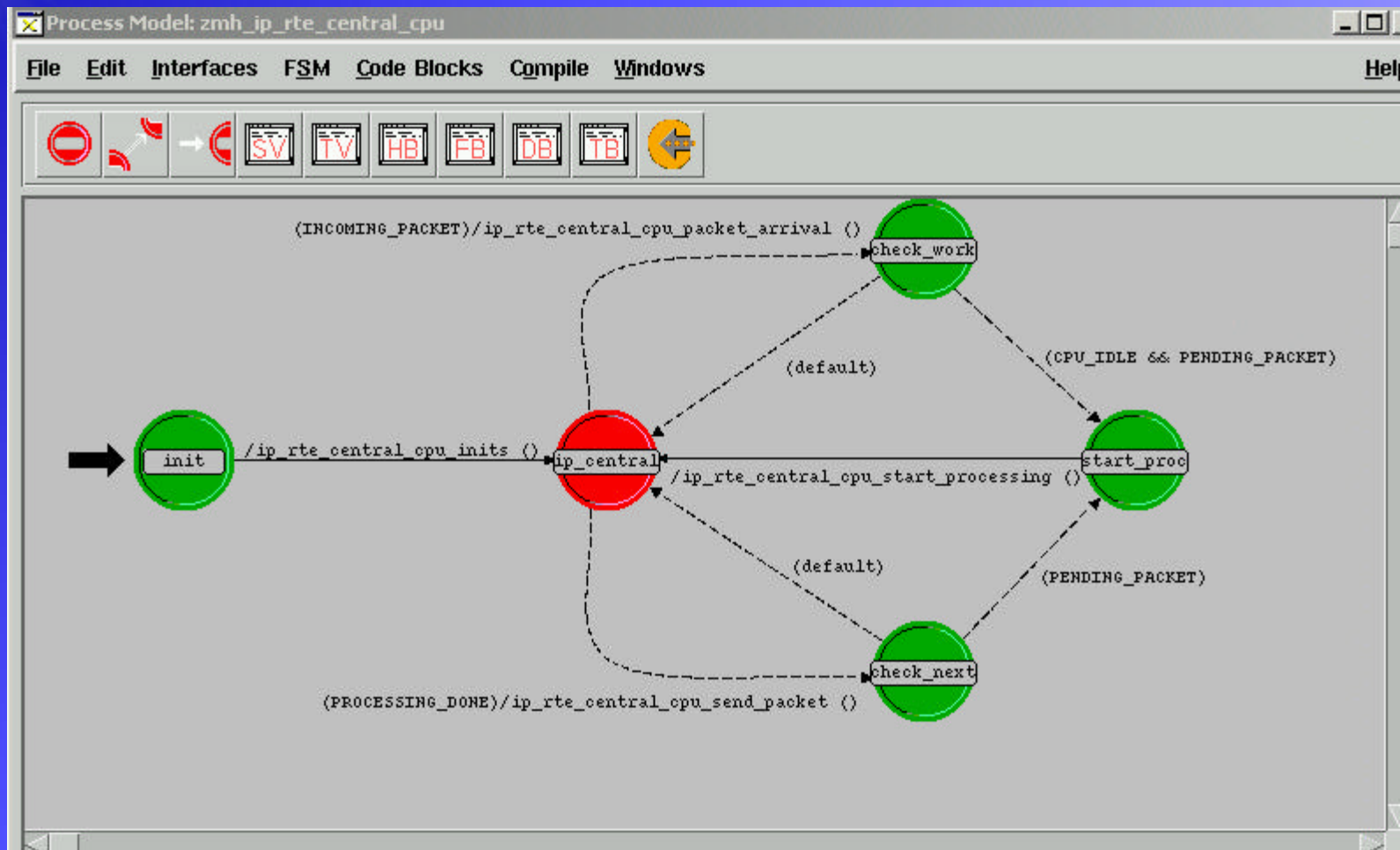
Node Model at Supervisor Host (SH)

Main function:
Split TCP ACK
segment;
TCP segment queue;
persist mode

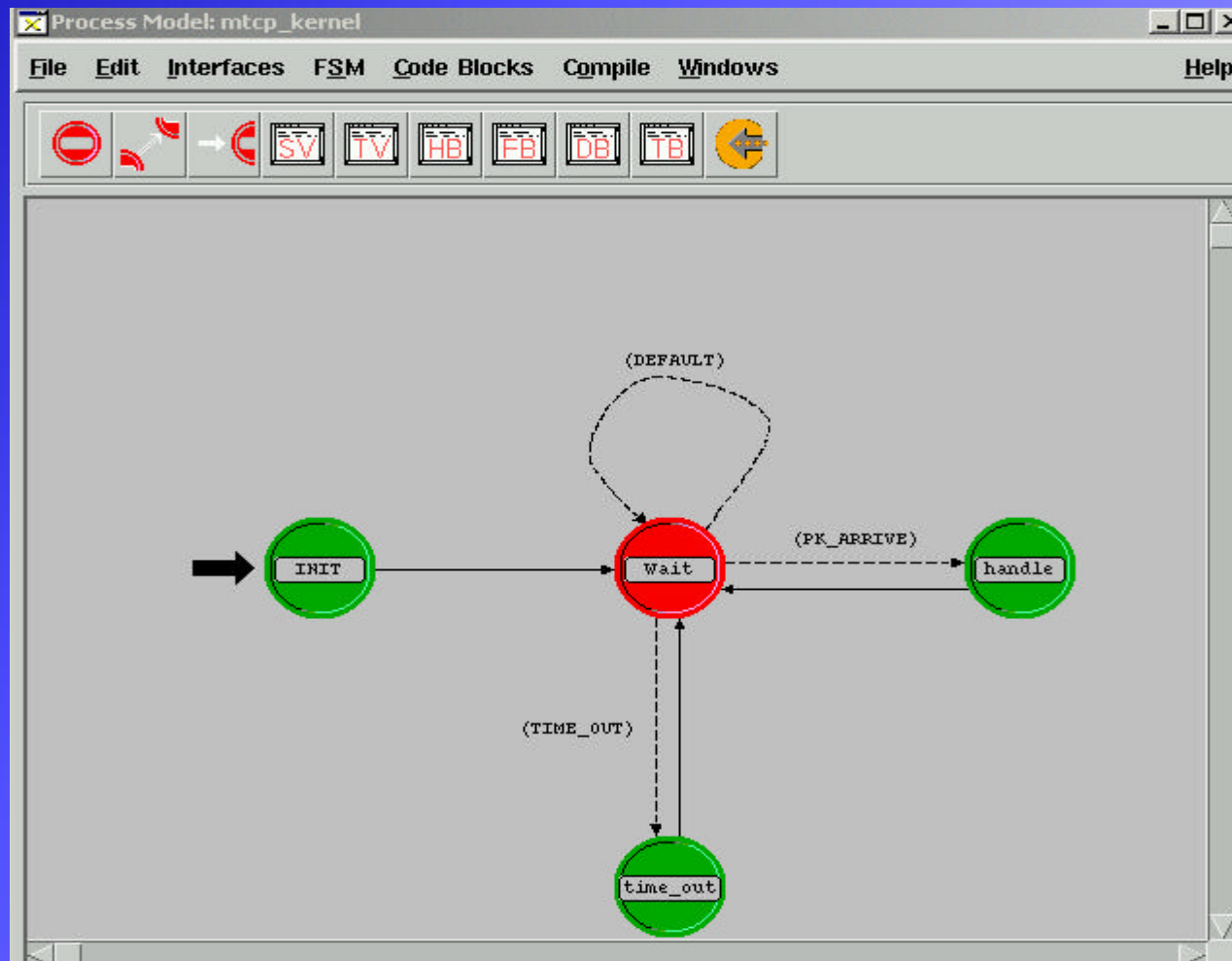
Routing at IP
node is
modified



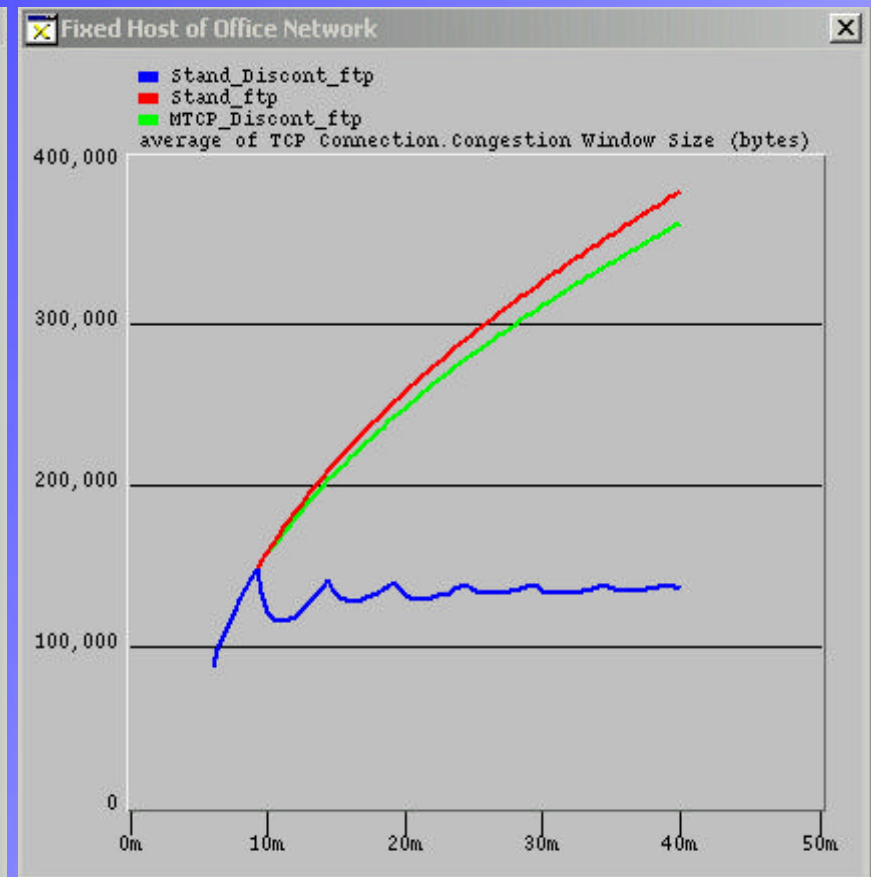
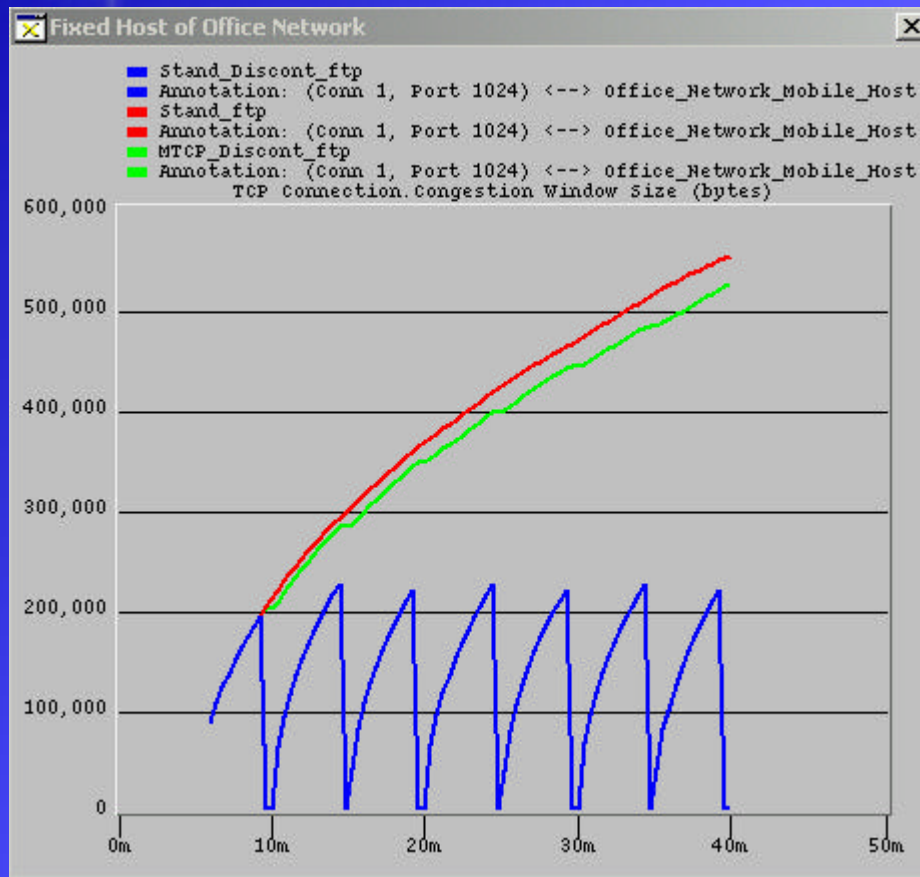
Routing at SH



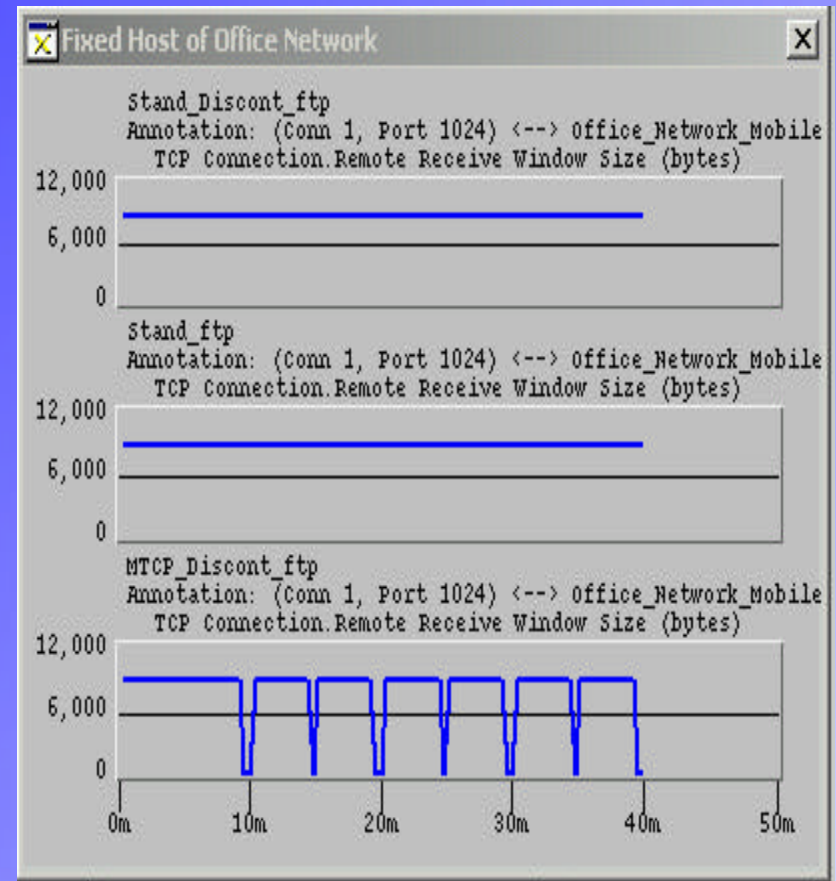
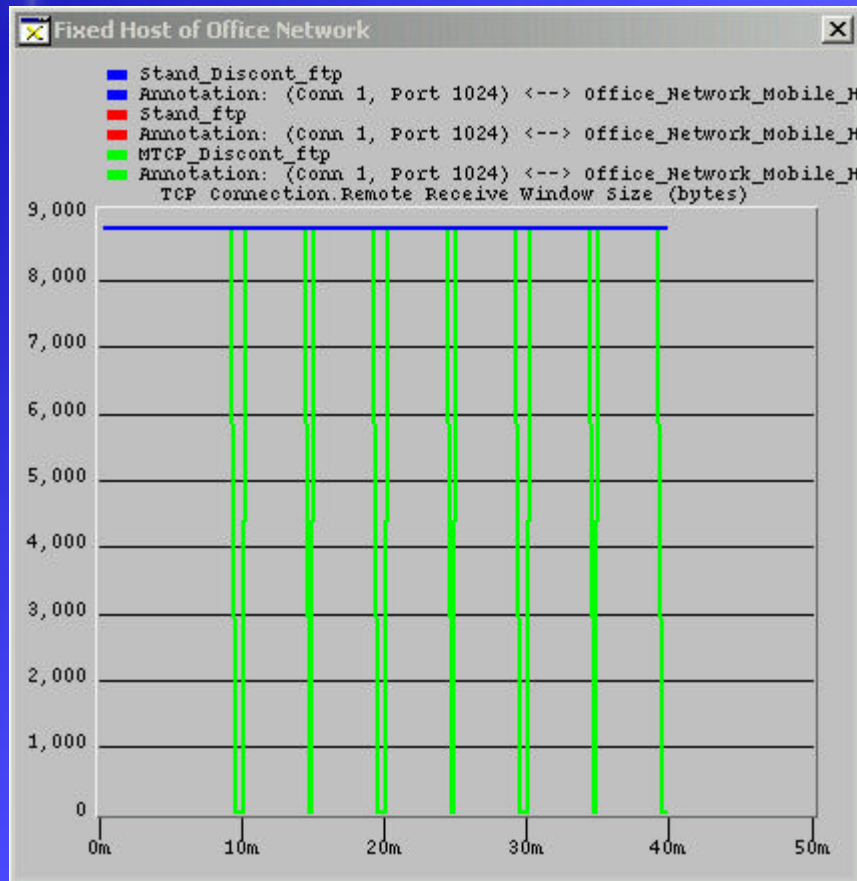
M-TCP at SH



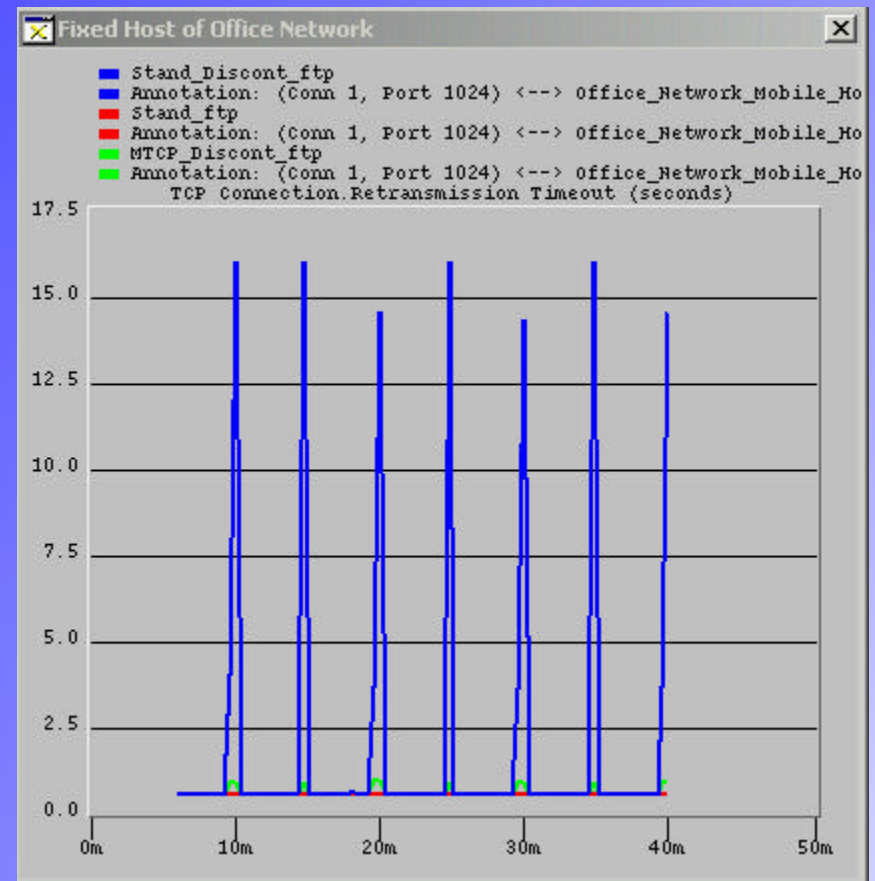
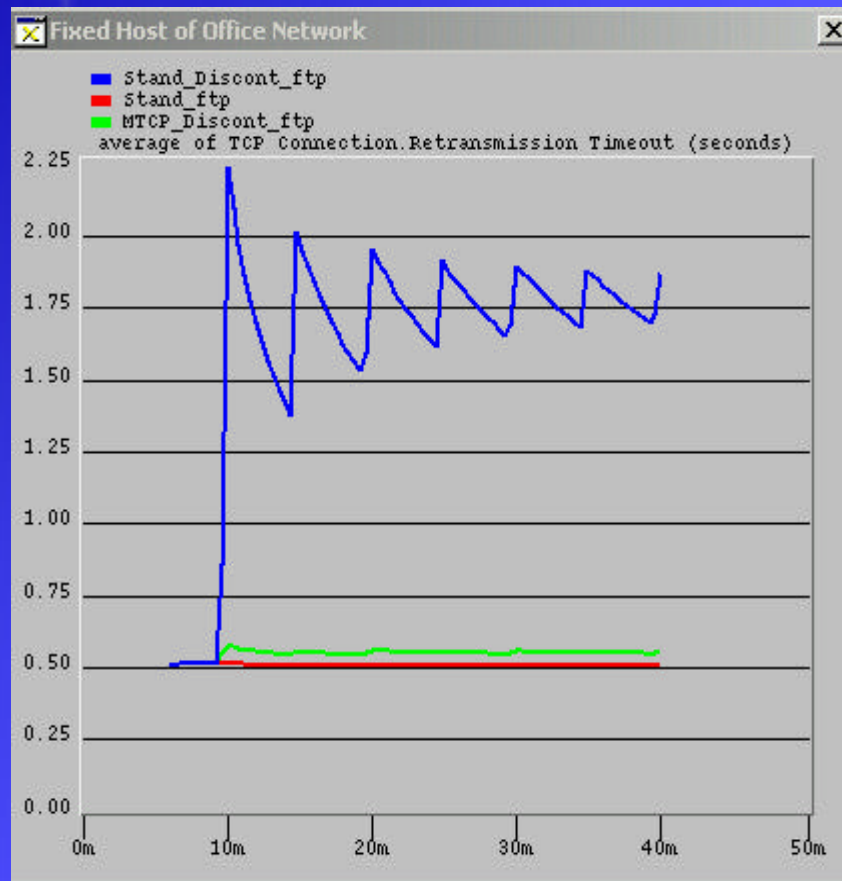
Simulation Results: Congestion Window



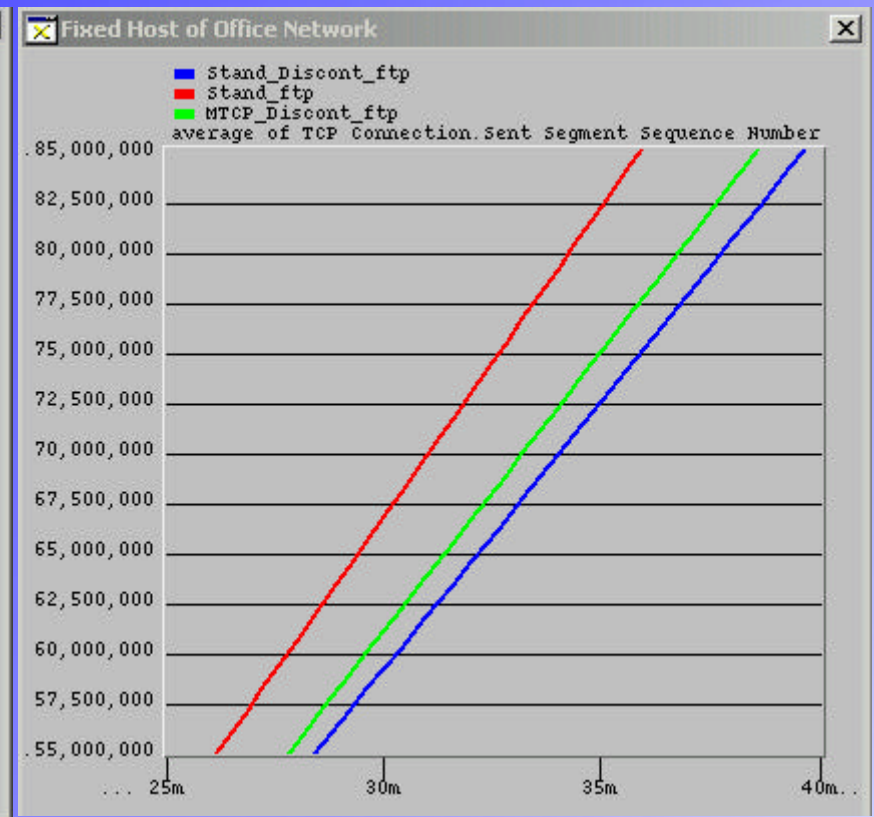
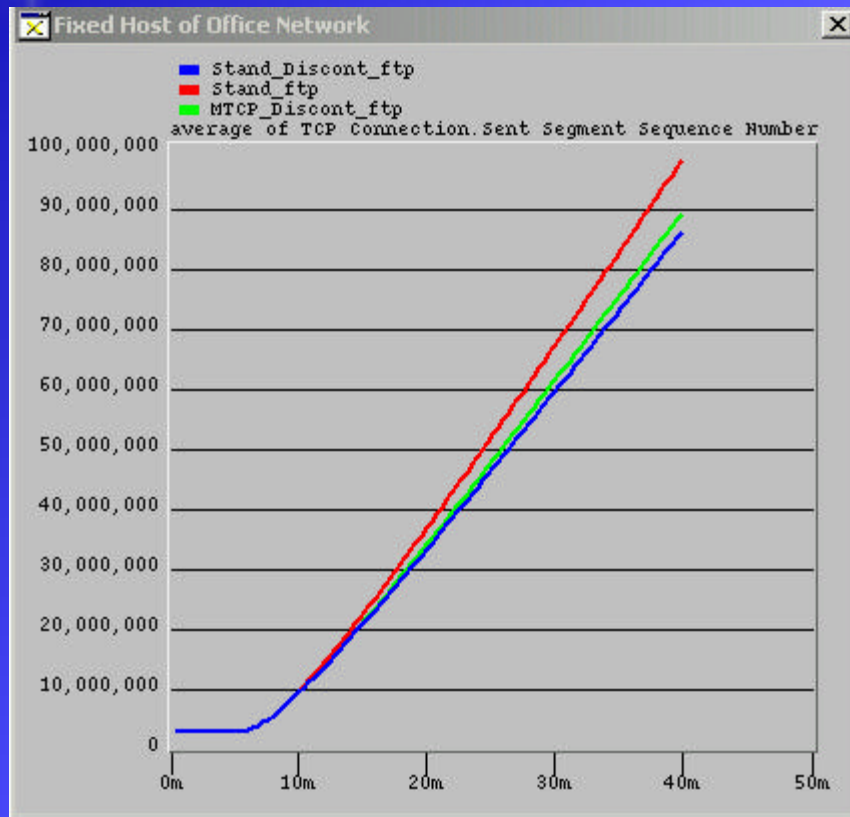
Simulation Result: Remote Receive Window



Simulation Result: RTO at Fixed Host(FH)



Simulation Result: Through Put






Conclusion

- M-TCP is good if mobile hosts suffer frequent disconnection and lengthy disconnection from the network
- Handoff is efficient by using M-TCP



Summary of our work

- Survey on the topic of TCP with Wireless network
 - 5 weeks
- Topology, protocol and system design
 - 3 weeks
- Coding
 - 6 weeks



The End