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Test Plan

Routing without Flow Control
Hot-Potato Routing
Simulation

Final Project
Parallel and Distributed Simulation
CSCI-4966/6965

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Test the Proof

Test to see if the routing algorithm delivers packets in expected O(n) time.
Test to see if the routing algorithm allows packets to be injected with a waiting time to inject of expected O(n).

Tests

KPs	=	8*8
N	=	8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, 96, 104, 112, 120, 128
PE	=	4 (parallel)
Simulation Time	=	100,000
Part Sources	=	25%, 50%, 75%, 100%
Absorb Sleeping Packet	=	0
Target Run Time	=	2 minutes

Determine :

O(N) of injection wait
O(N) of worst case injection wait
O(N) of delivery time

Data to Collect:

Ave. injection time / N
Worst Case injection wait / N
Delivery time / N

Simulation time must be long enough so that the network delivers (and injects) at least N*N*4 packets. This is so that the number of packets in the network at the end of the simulation is less than the number of packets that were delivered (and injected) and consequently less than the number of packets for which we have recorded statistics for.

Test the practical application of the algorithm.
Optimized Version (routers absorb sleeping packets)

Test to see if the routing algorithm delivers packets in expected O(n) time.
Test to see if the routing algorithm allows packets to be injected with a waiting time to inject of expected O(n).

Tests

KPs	=	8*8
N	=	8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, 96, 104, 112, 120, 128,
PE	=	1 (sequential), 4 (parallel)
Simulation Time	=	100,000
Part Sources	=	25%, 50%, 75%, 100%
Absorb Sleeping Packet	=	1
Target Run Time	=	2 minutes

Determine :

O(N) of injection wait
O(N) of worst case injection wait
O(N) of delivery time

Data to Collect:

Ave. injection time / N
Worst Case injection wait / N
Delivery time / N

Simulation time must be long enough so that the network delivers (and injects) at least N*N*4 packets. This is so that the number of packets in the network at the end of the simulation is less than the number of packets that were delivered (and injected) and consequently less than the number of packets for which we have recorded statistics for.

Test the Parallel Simulation

Show the correctness of the simulation

1. Deterministic: any of the configurations tested on the sequential and parallel models.

2 Tests

KPs	=	8*8
N	=	16
PE	=	1 (sequential), 2 (parallel), 4 (parallel)
Simulation Time	=	10,000
Part Sources	=	50%
Absorb Sleeping Packet	=	1
Target Run Time	=	NA

Compare Results

Performance

Determine the **speedup factor** for Parallel Simulation (at various N) (at various #KPs) (at various #PEs) .
Effect of the parameters on simulation performance.

Speedup Factor
Remote Events / Net Events
Events Rolled Back / Net Events Processed
Event Rate

KP Test

KPs	=	2*2, 4*4, 8*8, 16*16
N	=	16, 32, 64, 128, 256
PE	=	4 (parallel)
Simulation Time	=	100,000
Part Sources	=	100%
Absorb Sleeping Packet	=	1

PE Test

KPs	=	8*8
N	=	16, 32, 64, 128, 256
PE	=	1 (sequential), 2 (parallel), 4 (parallel)
Simulation Time	=	100,000
Part Sources	=	100%
Absorb Sleeping Packet	=	1

Data to Collect:

Total Execution Time Sequential / Total Execution Time Parallel
Remote Events Sent / Total Events Processed
Event Rate
Net Events Processed
Events Rolled Back