BCN Simulation Environment

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What needs to be agreed

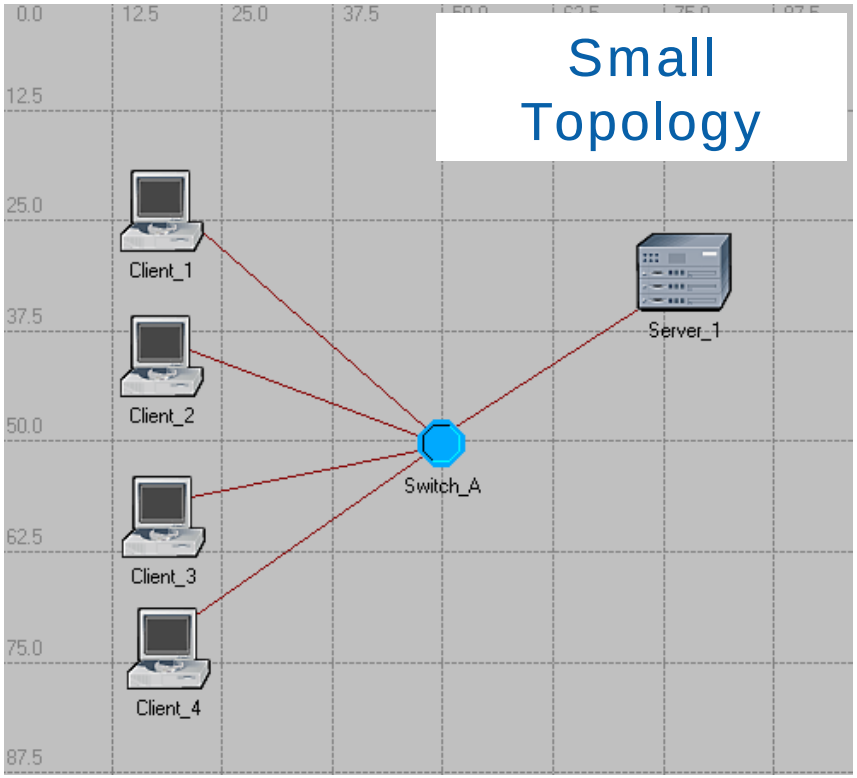
- Network Topologies/Scenarios
  - End Stations, Switches, Hops, Link Lengths (delay) etc.
- Simulation Workloads
  - Transport Layers
  - Application abstraction: Packet Size, distribution etc.,Traffic Mix
  - Granularity of flows, number of flows etc.
- Measurement Metrics
  - Throughput (where – application, congested link etc.)
  - Latency (where – application, L2 etc.), Latency Jitter?
  - Buffer Utilization?
  - Fairness factor?
- CN Protocol
  - Davide's September Presentation AND
  - FAQ document to clarify details

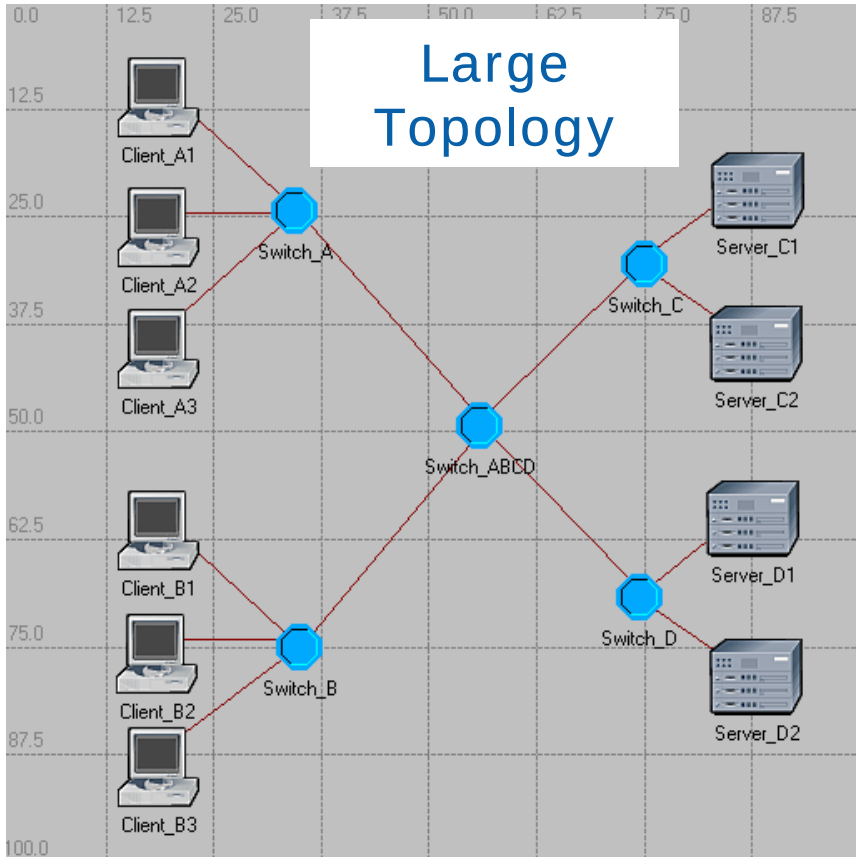
What does not need to be agreed

- Simulation Tools/Methodology
- Switch or end station implementation details (? If required, how much be disclosed?)
- ??

Example Proposal

Topologies





- All 10 GbE Links
- Mix of 10 GbE and 1 GbE links to create extreme congestion
- Less than 100m link lengths

Workloads

- Transport Layers
  - TCP and UDP
- Application abstraction
  - Packet Size
    - UDP Application = Constant 400 B
    - TCP Application = Exponential distribution with mean of 8000 B
    - 1500 B Ethernet MTU
  - Clients sending data to Server at maximum rate sustainable by network
  - Unidirectional/Bidirectional traffic
- Traffic Mix
  - 80% TCP and 20% UDP
  - All traffic with same 802.1p priority
- Granularity of flows, number of flows etc.
  - Each client initiates 10 TCP connections and 1 UDP connection to each server
  - All flows are persistent long-lived flows

Metrics

- Throughput
  - Link Throughput
    - Bottleneck (Most Congested) link utilization
    - Uncongested link utilization
  - Application Throughput (Goodput)
    - TCP application throughput
    - UDP application throughput
- Latency
  - End-to-end latency at application
- Packet Drops
  - Number of packets dropped in switch due to congestion
- Buffer Utilization in the switches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