



CN-SIM: A Baseline Simulation Scenario

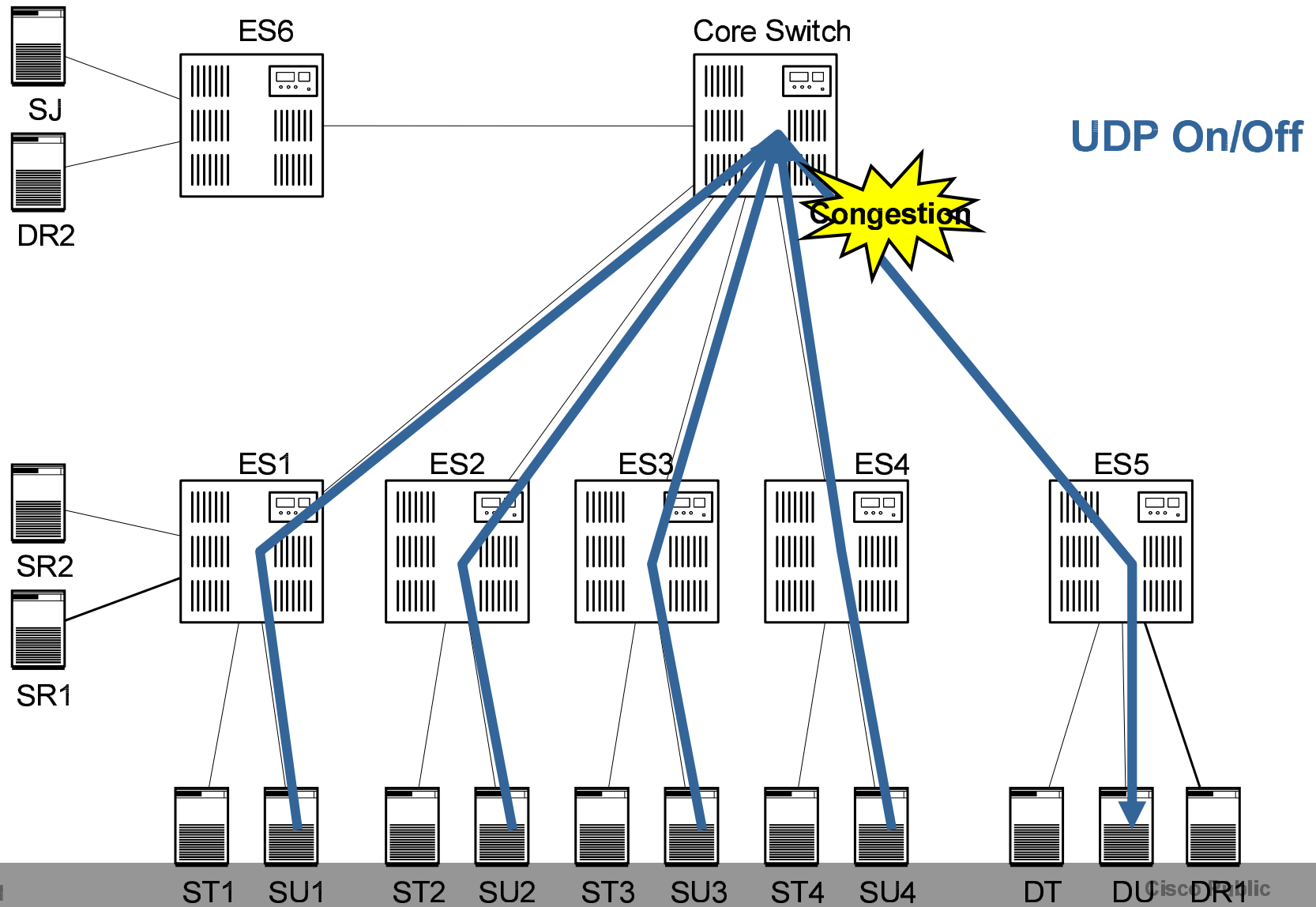
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Motivation

- **So far we have defined a set of common**
 - **Topologies**
 - **Traffic Patterns**
 - **Metrics**
 - **Bridge Model**
- **To ensure comparability of results, we also need to make sure our models and simulation tools are properly calibrated**
- **The **baseline simulation scenario** should allow us to achieve a reasonable alignment quickly and easily**

Topology & Traffic Pattern



Configuration, Parameters & Workload

- **Short Range, High-Speed Datacenter-like Network**

Link Capacity = 10 Gbps

Buffer Size = 150 KB

Switch latency = 1 μ s

Link Length = 100 m (.5 μ s propagation delay)

- **BCN Control Loop Parameters**

Qeq = 375 64-byte pages (16 1500-byte frames)

S = 150 KB (frames are sampled on average every 150 KB received)

W = 2

$G_i = 5.3 \times 10^{-4} (\text{Line_rate}/10 * 1 / ((1 + 2 * W) * Q_{eq}))$

$G_d = 2.6 \times 10^{-4} (\frac{1}{2} * 1 / ((1 + 2 * W) * Q_{eq}))$

Ru = 1 Mbps

- **Workload: 100% UDP (or Raw Ethernet) Traffic**

SU1-SU4: fixed-length (1500 bytes) frames, Bernoulli temporal distribution with parameter $p = 0.5$ (i.e., offered load = 50%)

Simulation Run & Results

- **Simulation**

 - Duration: 100 ms

 - Initial Transient @ $t = 5$ ms (sources start)

 - Final Transient @ $t = 95$ ms (sources stop)

- **Results**

 - Throughput on congested downlink:

 - 10 Gbps (100%, measured during congestion)

 - Throughput on uplinks:

 - 2.5 Gbps (25%, measured during congestion)

 - Buffer utilization @ congested link:

 - Similar to diagram on next slide

Buffer Utilization

