**i) NS2 Simulator-Introduction**

**Introduction to NS-2:**

* Widely known as NS2, is simply an event driven simulation tool.
* Useful in studying the dynamic nature of communication networks.
* Simulation of wired as well as wireless network functions and protocols (e.g., routing algorithms, TCP, UDP) can be done using NS2.
* In general, NS2 provides users with a way of specifying such network protocols and simulating their corresponding behaviors.

Basic Architecture of NS2



Tcl scripting

* Tcl is a general purpose scripting language. [Interpreter]
* Tcl runs on most of the platforms such as Unix, Windows, and Mac.
* The strength of Tcl is its simplicity.
* It is not necessary to declare a data type for variable prior to the usage.

**ii) Simulate to Find the Number of Packets Dropped**

**nslab1.tcl**

set ns [new Simulator]

$ns color 1 Blue

$ns color 2 Red

set nf [open nslab1.nam w]

$ns namtrace-all $nf

set tf [open nslab1.tr w]

$ns trace-all $tf

proc finish {} {

global ns nf tf

$ns flush-trace

close $nf

close $tf

exec nam nslab1.nam &

exit 0

}

set n0 [$ns node]

set n1 [$ns node]

set n2 [$ns node]

set n3 [$ns node]

$ns duplex-link $n0 $n2 1Mb 10ms DropTail

$ns duplex-link $n1 $n2 1Mb 10ms DropTail

$ns duplex-link $n2 $n3 1Mb 10ms DropTail

$ns duplex-link-op $n0 $n2 orient right-down

$ns duplex-link-op $n1 $n2 orient right-up

$ns duplex-link-op $n2 $n3 orient right

set udp0 [new Agent/UDP]

$ns attach-agent $n0 $udp0

set null0 [new Agent/Null]

$ns attach-agent $n3 $null0

$ns connect $udp0 $null0

$udp0 set fid\_ 1

set cbr0 [new Application/Traffic/CBR]

$cbr0 attach-agent $udp0

$cbr0 set packetSize\_ 500

$cbr0 set interval\_ 0.005