Simulator implementation

The simulator consists of four modules:

- AS: it creates/produces a packet flow according to the interArrival time and send them to the BBU.

- BBU: it forwards the packets received from the AS to the RRH, compressed if it has to.

- RRH: it uncompresses the packet, if it was compressed, and send it to the collector for the delay statistics.

- COLLECTOR: it handles of the delay statistics.

The simulator architectureis shown in the following figure:

//figura

AS

The AS module has to perform cyclically the following operations:

- It creates a new packet with the following parameters:

- An id to identity the packet.

- The packet size that can be taken either from an exponential distribution or a lognormal one.

- The packet destination that is uniformly chosen between N possibility .

- It waits as long as necessary to guarantee the correctness of the interarrival rate.

BBU

When the BBU module receives a packet from the AS it has to do the following actions:

- If it’s idle, it changes its status in busy and processes the packet immediately in the following way:

- it checks if the packet must be compressed or not.

- it starts the transmission of the packet to the RRH and it awaits its conclusion.

- if there are any other packets in the queue, the first of them is pulled off from the buffer and served, otherwise it changes its status in idle.

- If it’s busy the packet will be queued and served using a FIFO policy.

RRH

When one of the N RRHs receives a packet from the BBU acts as follow:

- If it’s idle:

- it changes its status in busy and checks if the packet has to be decompressed.

- if it has to, it starts the decompression of the packet and it awaits its conclusion before sending the packet to the collector; otherwise it forwards the packet to the collector immediately.

- if there are any other packets in the queue, the first of them is pulled off from the buffer and served, otherwise it changes its status in idle.

- If it’s busy the packet will be queued and served using a FIFO policy.

COLLECTOR

The COLLECTOR module (virtually) brings together all the packets from the RRHs and deals with the end-to-end delay statistics.