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una Società Finmeccanica

CN-MAS

Core Network Multicast Algorithm Simulator

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MAS Purposes

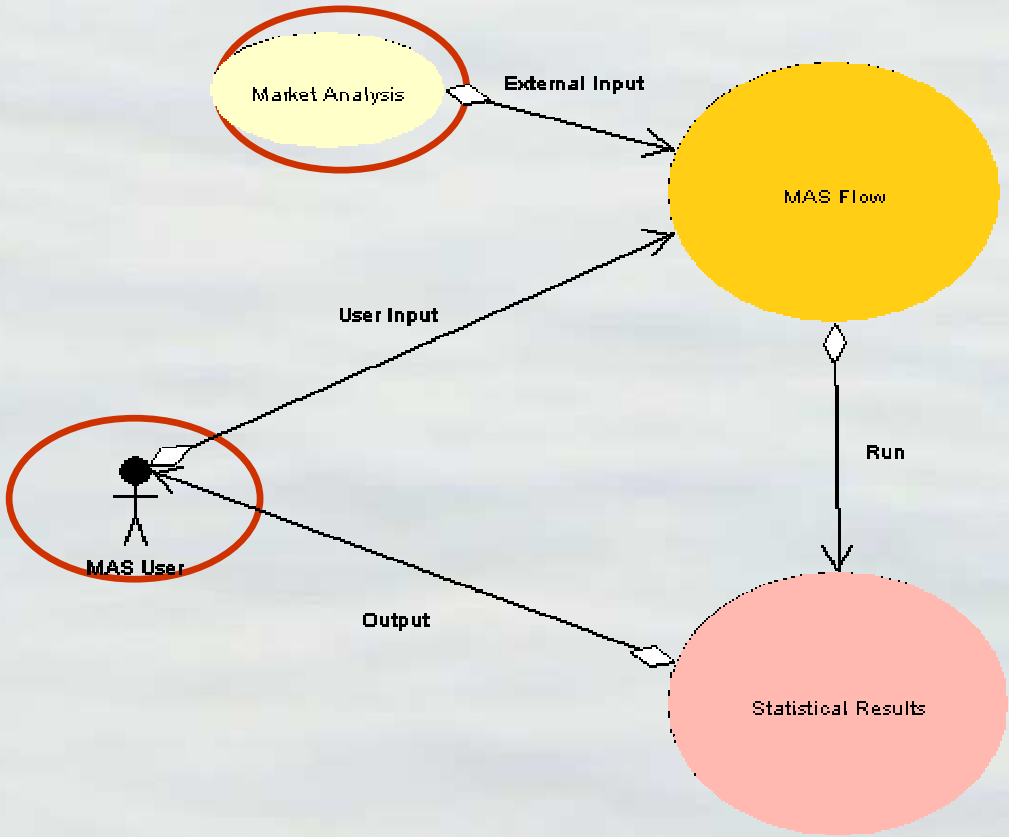
- Simulate the behaviour of UMTS user traffic in a fully IP network
- Verify the validity of selected Multicast algorithms
- Provide statistically assessed results regarding network, QoS and algorithms

MAS Approach

MAS Operator
&
Market Analysis

MAS Flow

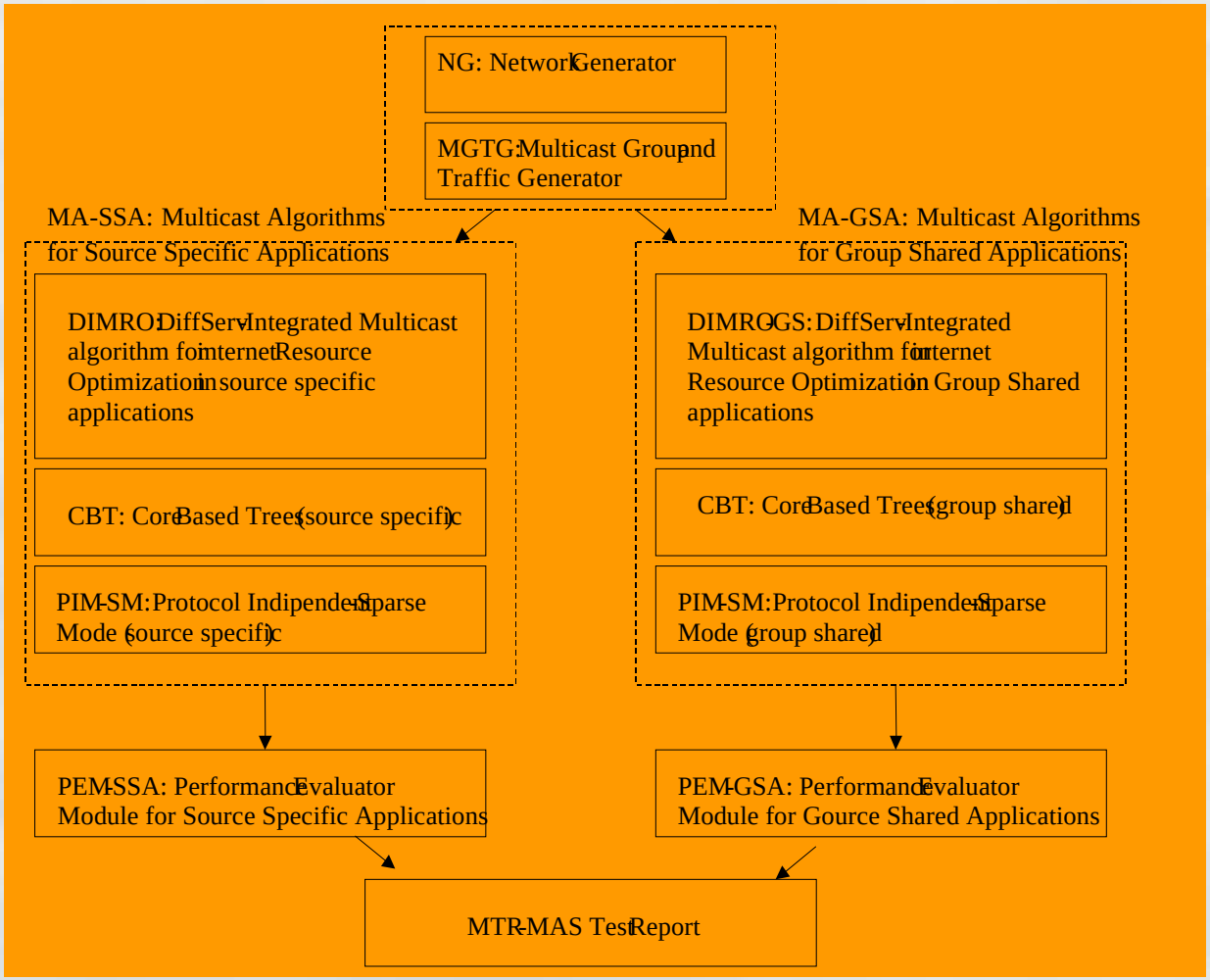
Statistical Results
For
MAS Operator



MAS Design

- The **SAILOR Project** context
  - MAS is based on a fully **IP Core Network**
  - RASN is simulated as a node that generates multicast traffic statistically modelled
  - network optimisation is focused on the IP core network separately from the UMTS access network

MAS module definition



MAS Flow

Scenario Generator
(Input)

USER
- Multicast Group, Number of User
- Traffic Sources and profiles
- PtMP, MPtP or MPtMP configuration

NETWORK
- Topology
- Network connectivity, bandwidth

Simulation
Engine

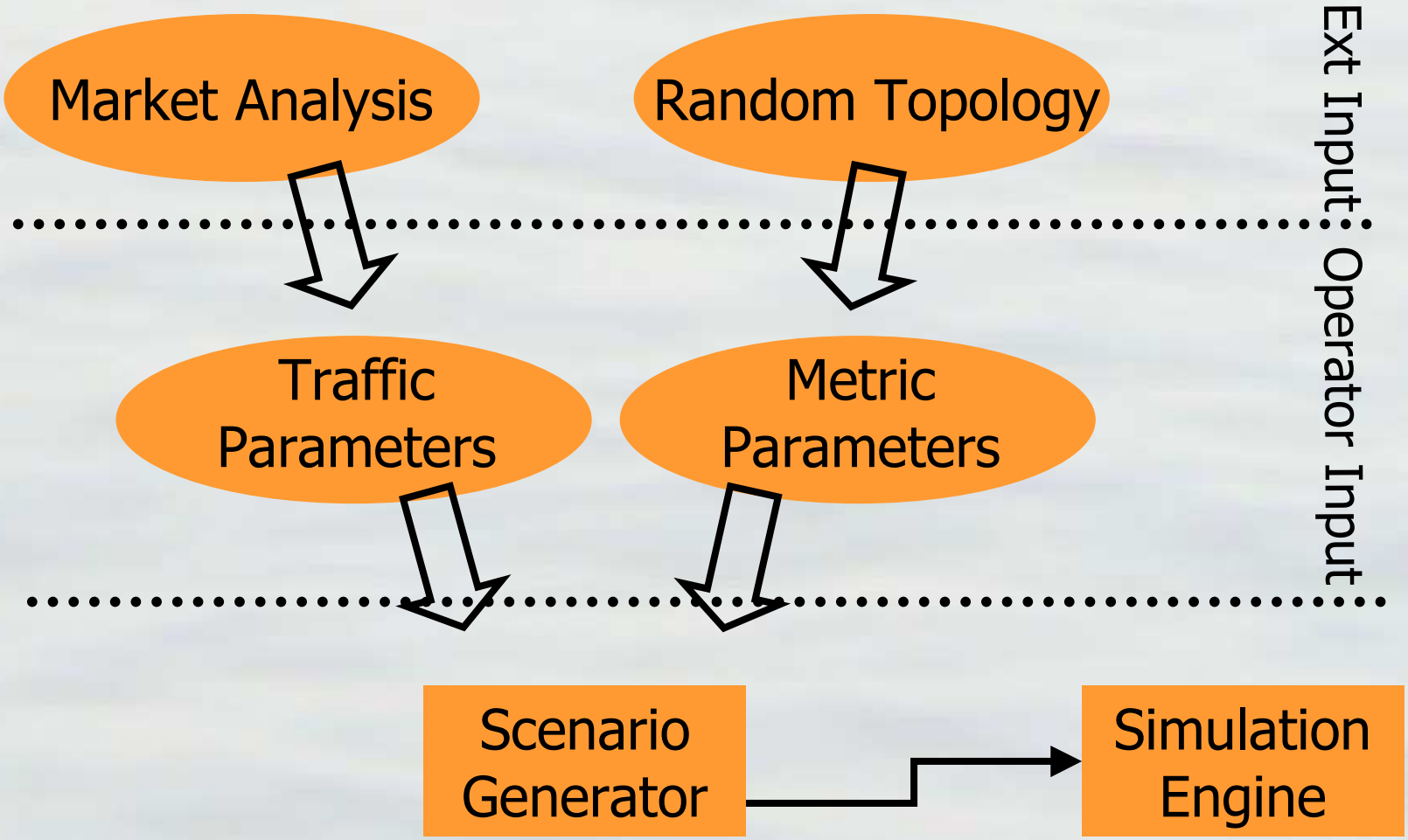
PARAMETERS
- Routing Algorithms

➡ **MAS**

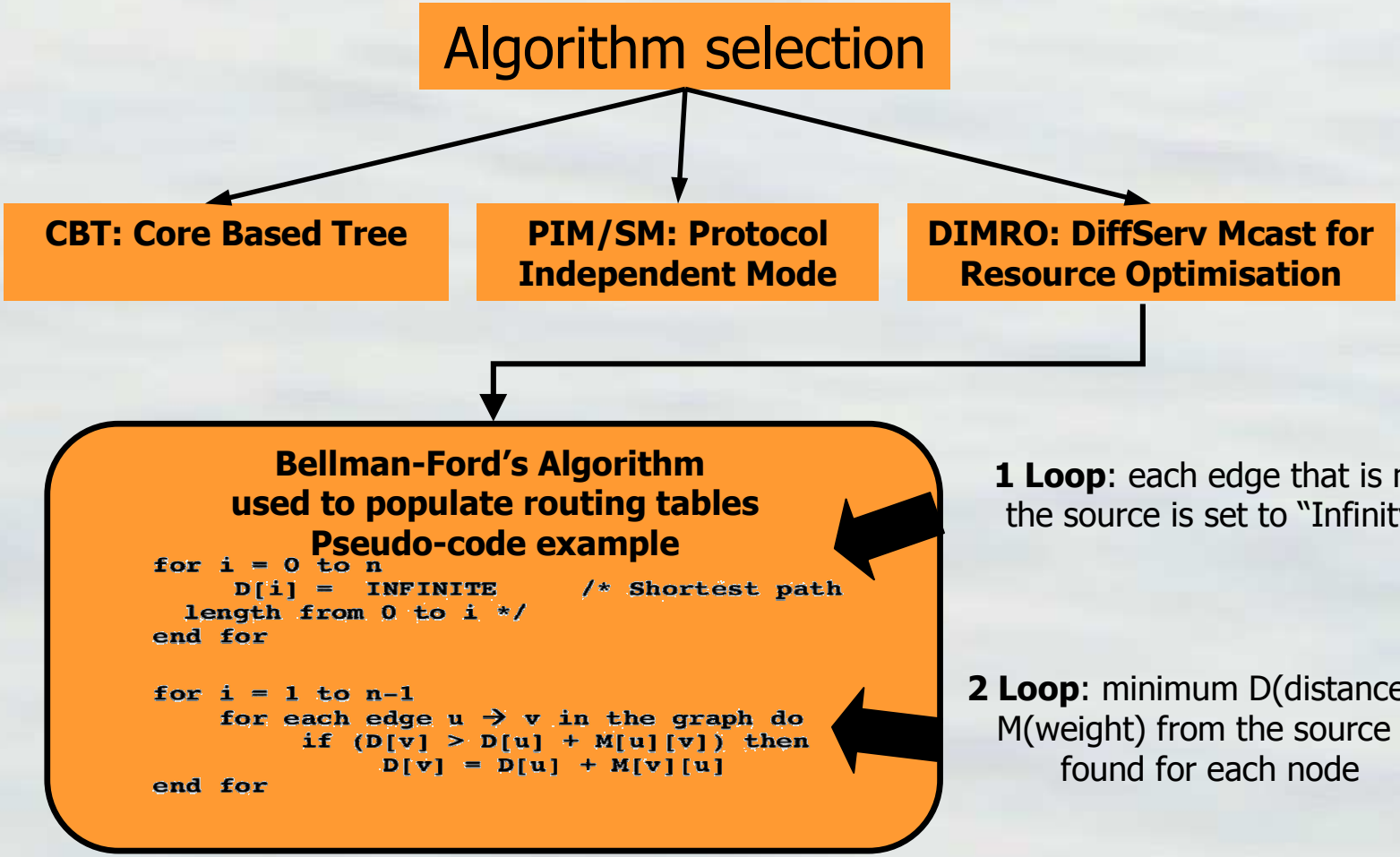
Performance Evaluator
(Output)

SET of STATISTICS
- QoS_performances
- Reliability of Multicast
- Network load

MAS Module – Scenario Generator



MAS Module – Simulation Engine

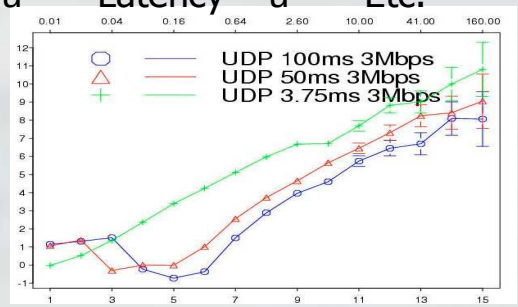


MAS Module – Performance Evaluator

Trace Software Monitor

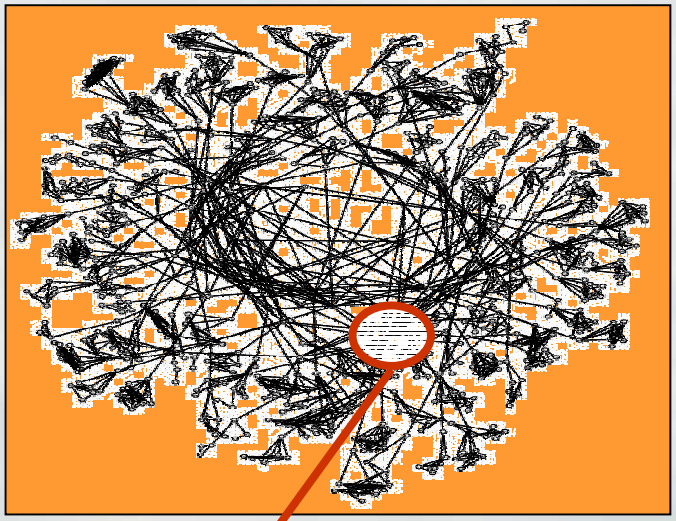
Plots of meaningful parameters

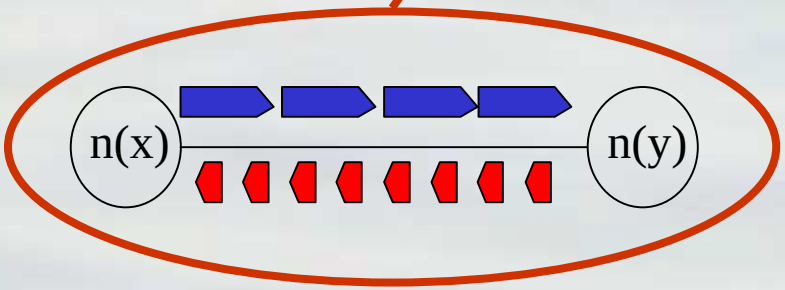
- ü Time Delay
- ü Bandwidth
- ü Latency
- ü Packet Loss
- ü Tree Stability
- ü Etc.



Algorithm Performance & Network Performance

NAM Network Animation Monitor





MAS software module decomposition

- Network Generator (NG) module
- Multicast Group and Traffic Generator (MGTG) module
- MAS Test Report (MTR) module

Network Generator (NG) module

To ensure a fairly evaluation of different multicast routing algorithms a random network will be generated according to the Waxman's model.

In the Waxman's model nodes in the network are distributed at random across a Cartesian coordinate grid.

Multicast Group and Traffic Generator (MGTG) module

Four general service classes:

- Conferencing
- Messaging
- Web Brousing&Internet/Intranet
- Streaming and Data transfer

Which configurations?

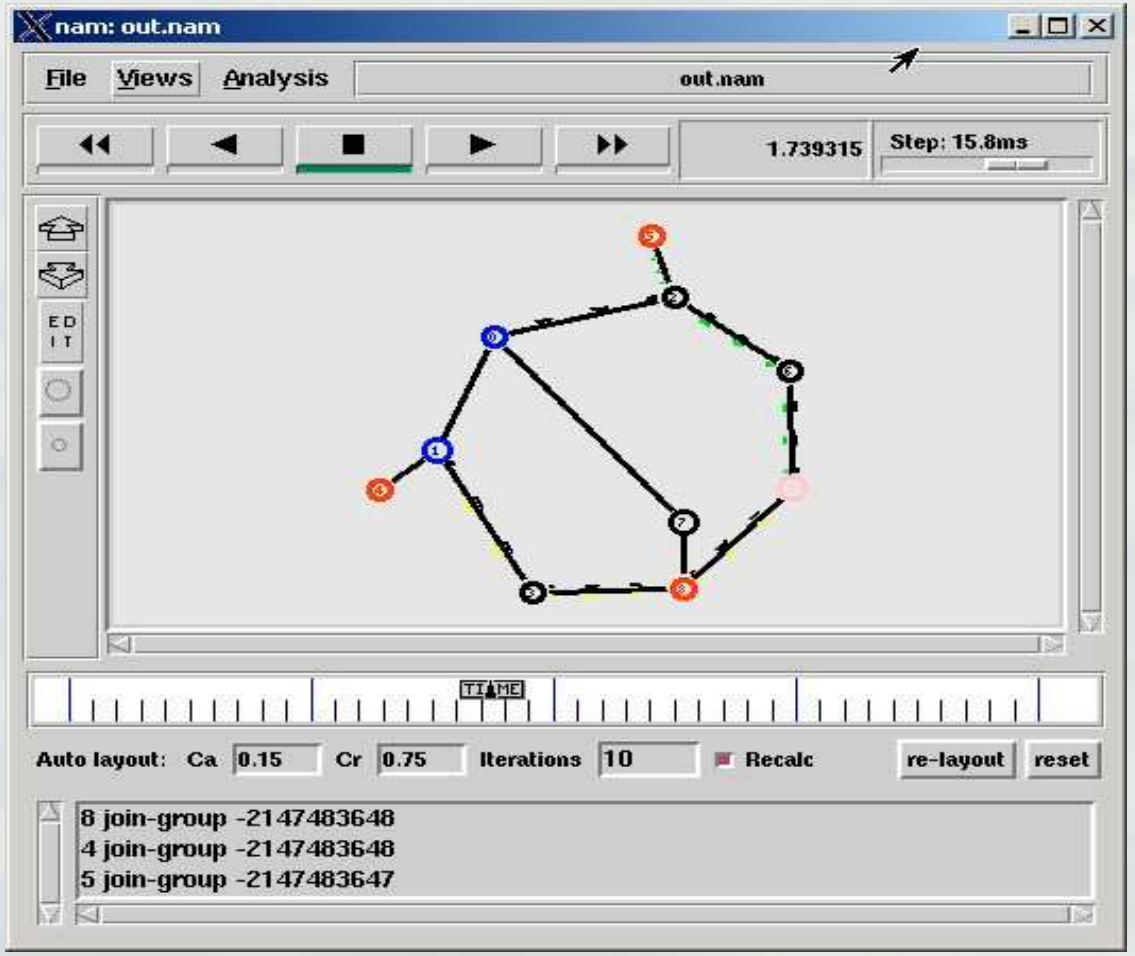
Point to Multipoint (PtMP), Multipoint to Point (MPtP) and Multipoint to Multipoint (MPtMP)

MAS Test Report (MTR) module

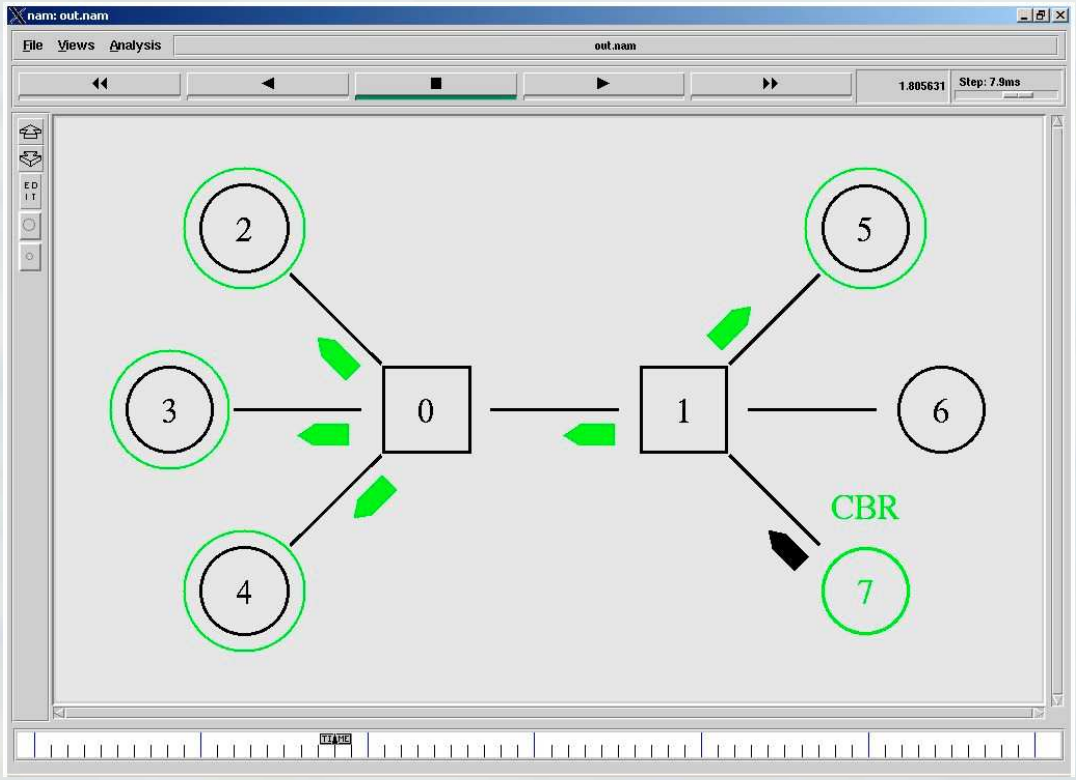
The MAS Test Report (MTR) will record the output provided by the MAS in a delivered structure which takes into account all the constraints imposed by the communication problem to the multicast algorithm.

The MAS simulator shall provide statistically assessed set results form the user population profiles, as identified by the market analysis

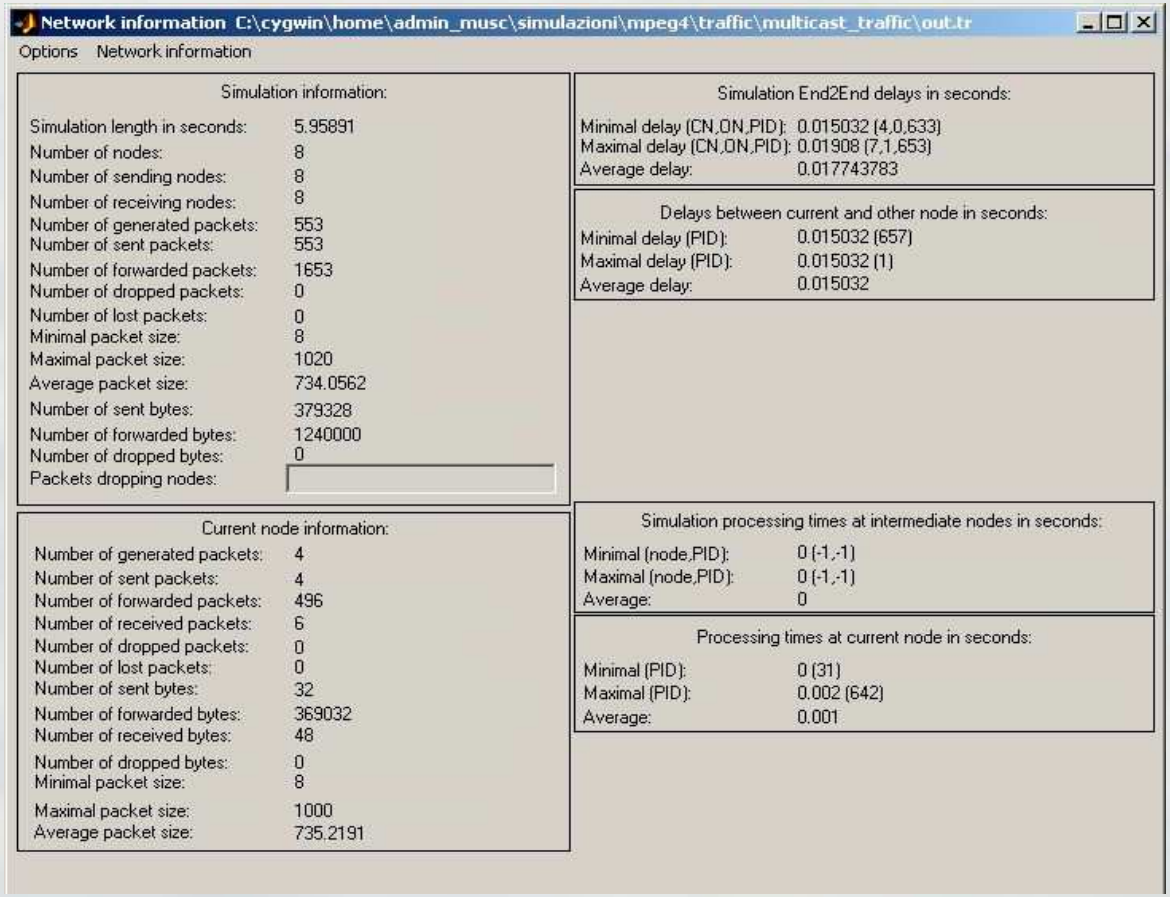
NAM graphical user interface



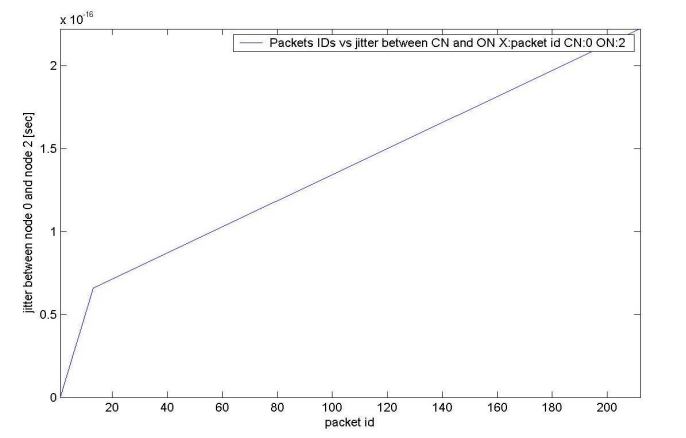
MAS simple test case NAM output



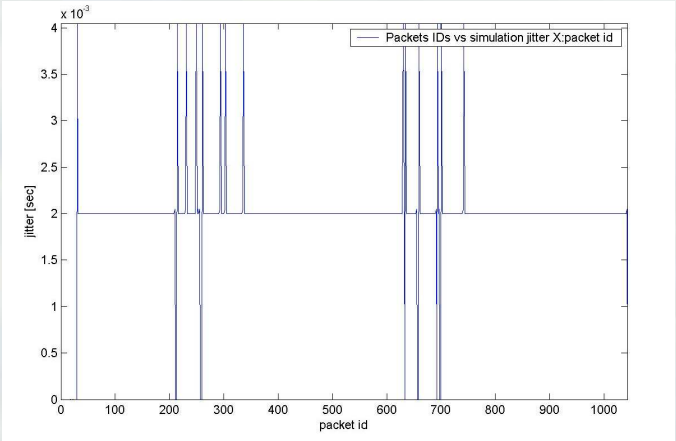
MAS test case output statistic



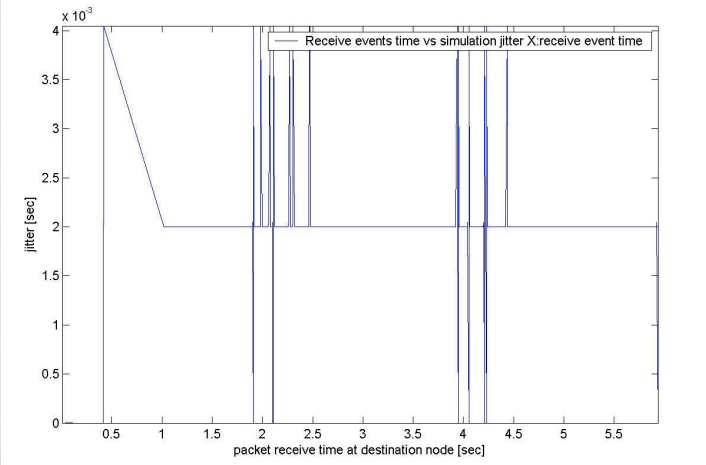
MAS test case output graphics



Inter-node jitter statistics



Packet jitter



Packet receive time jitter statistics

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Thank You !!!