
# Deployment of WAGON
## (Web trAffic GeneratOr and beNchmark)
## on the VTHD platform

Mistral Project
INRIA - Sophia-Antipolis

# WAGON

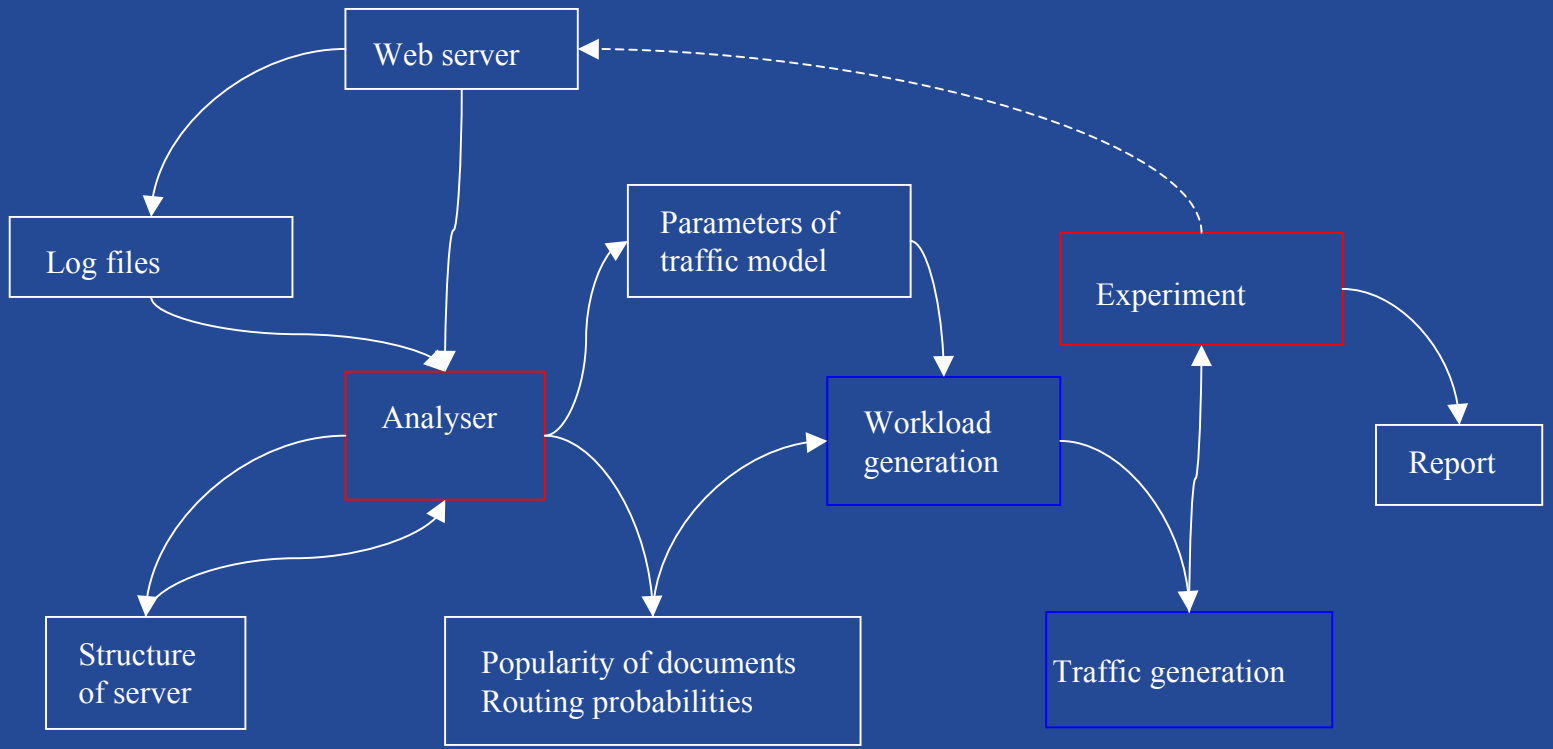
What is WAGON?

- A tool for generating Web traffic
- A tool for performing benchmarking (e.g. of Web servers, protocols, ...)

It includes :

- a Web traffic generator
- statistical tools
- monitoring tools
- reporting tools

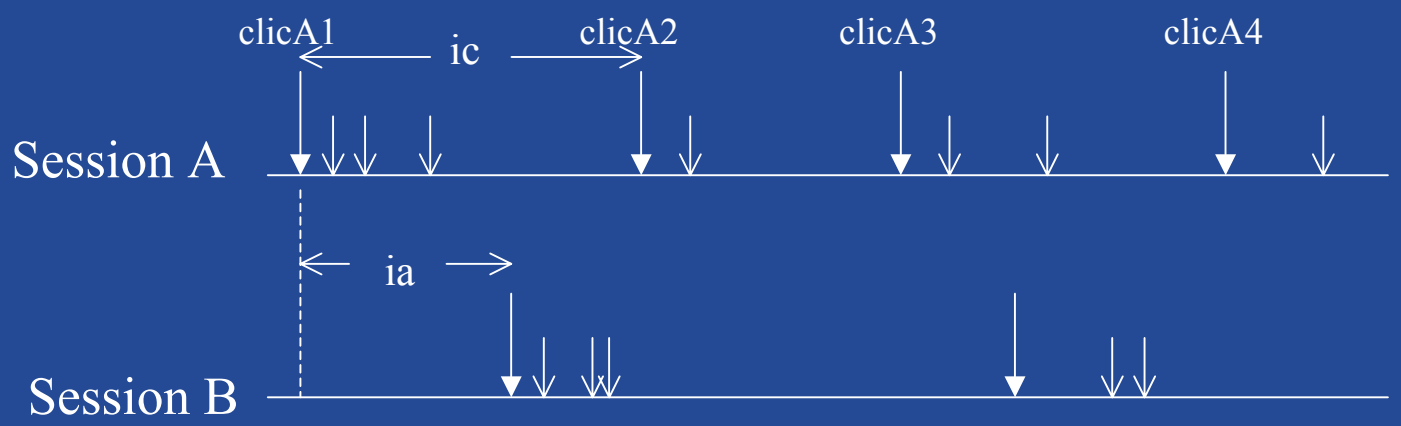
# WAGON: A Global View



# WAGON:Traffic Generator

Traffic model includes:

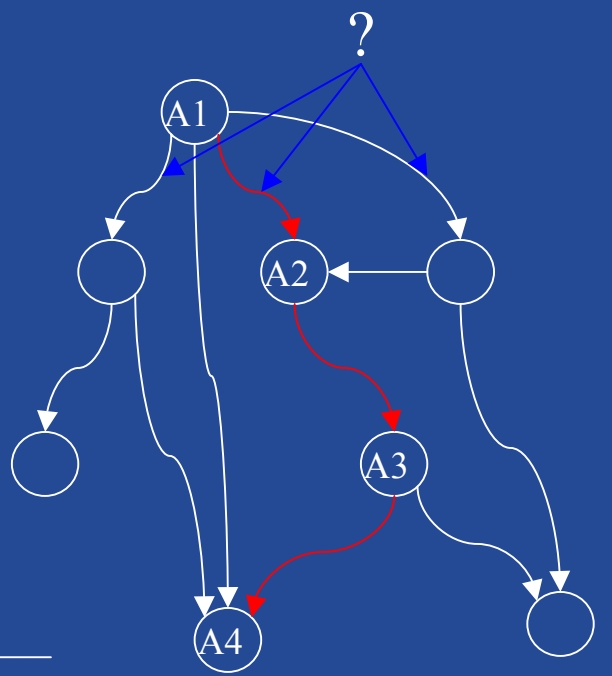
- new session arrival process (Poisson)
- distribution of number of clicks in a session
- distribution of thinking/reading time



# WAGON: Traffic Generator (cont.)

Navigation model includes

- popularity of documents
- routing

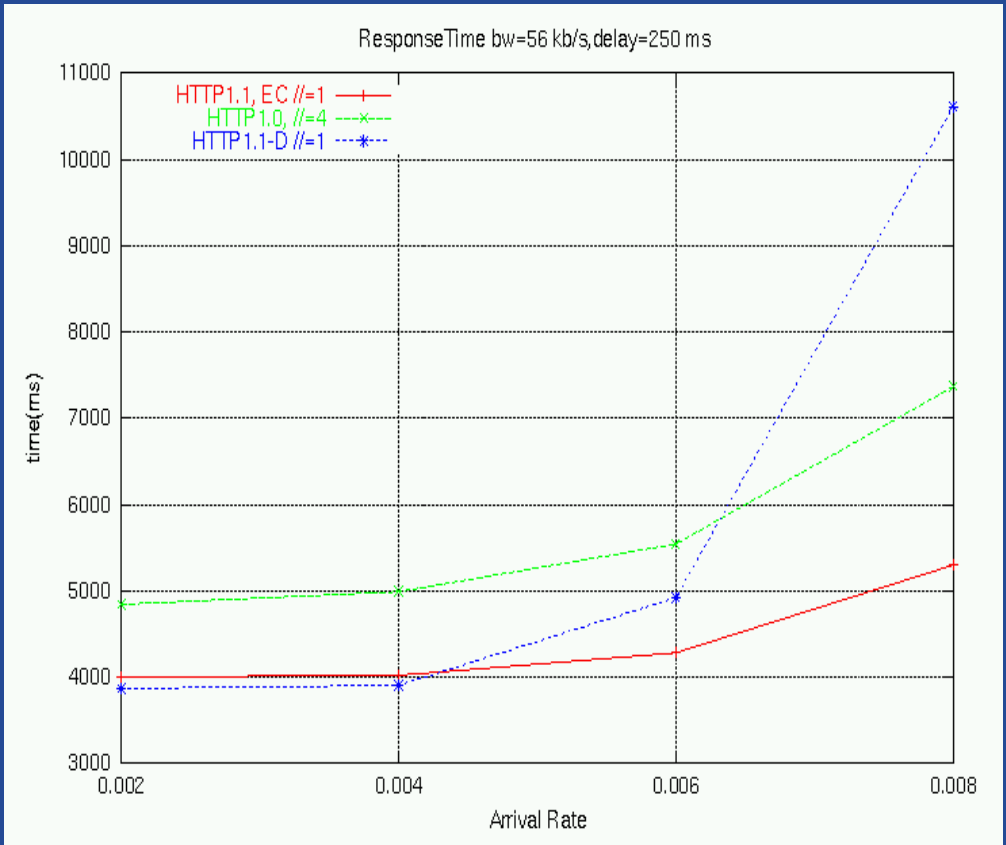
# Experiments

Comparison of HTTP1.0 and HTTP1.1

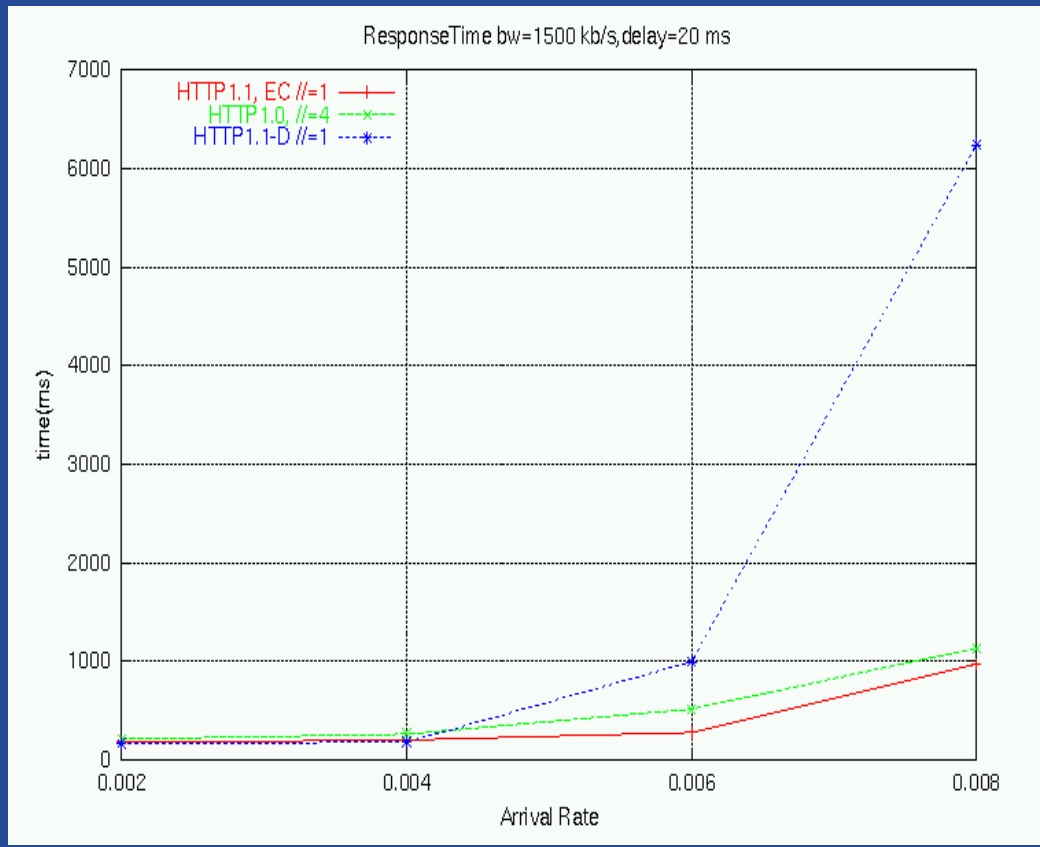
Comparison of Apache and Jigsaw

Generation of Web traffic on VTHD (2.5 Gb/s network -- IP/WDM)

# Comparison of HTTP1.0 and HTTP1.1

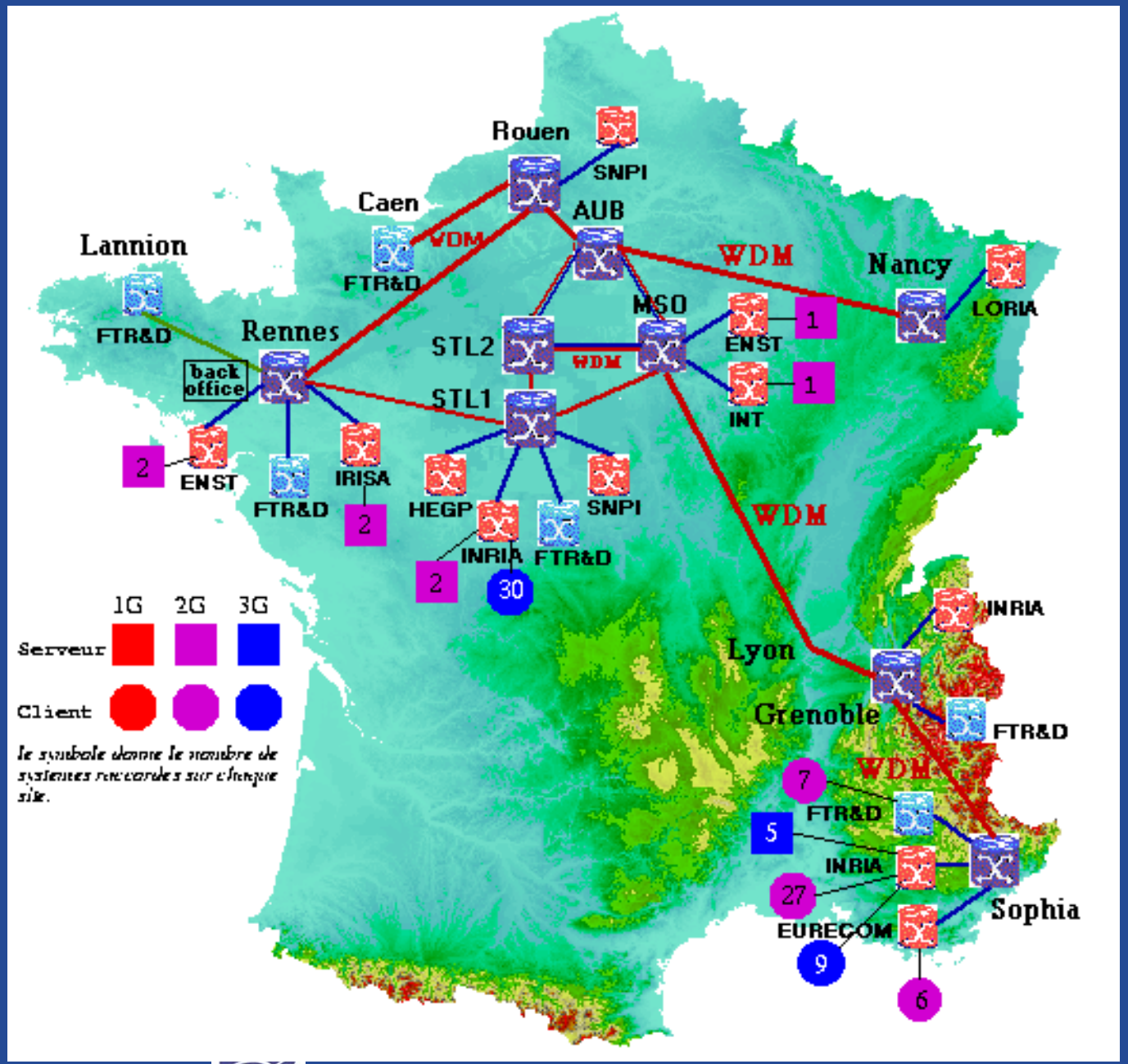



Modem access




T1 access

# Deployment of WAGON on VTHD



# Deployment

94 work stations (3 generations of PCs)

- 2 servers at IRISA-Rennes
- 2 servers at ENST-Bretagne
- 2 servers at INRIA-Rocquencourt
- 1 server at INT Paris
- 1 server at ENST Paris
- 5 servers at INRIA-Sophia
- 79 clients (Eurecom, FT R&D, Inria Rocq. & Sophia)
- 2 monitoring machines

For more information see http: //www.vthd.org

# Generation of Web traffic

First generation:

6 clients -> 1 server = 80Mb/s (1 config.)

Second generation:

6 clients -> 1 server = 140Mb/s (1 config.)

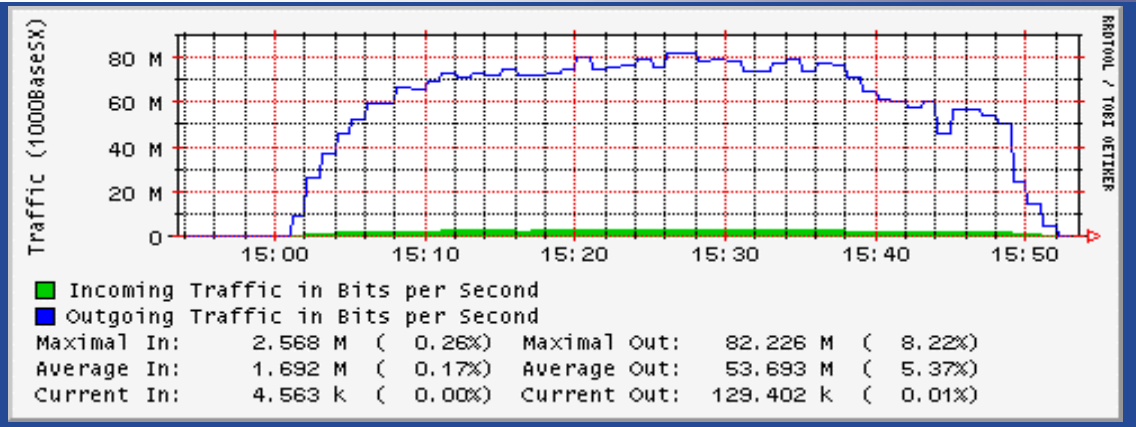
Third generation (+software optimisation):

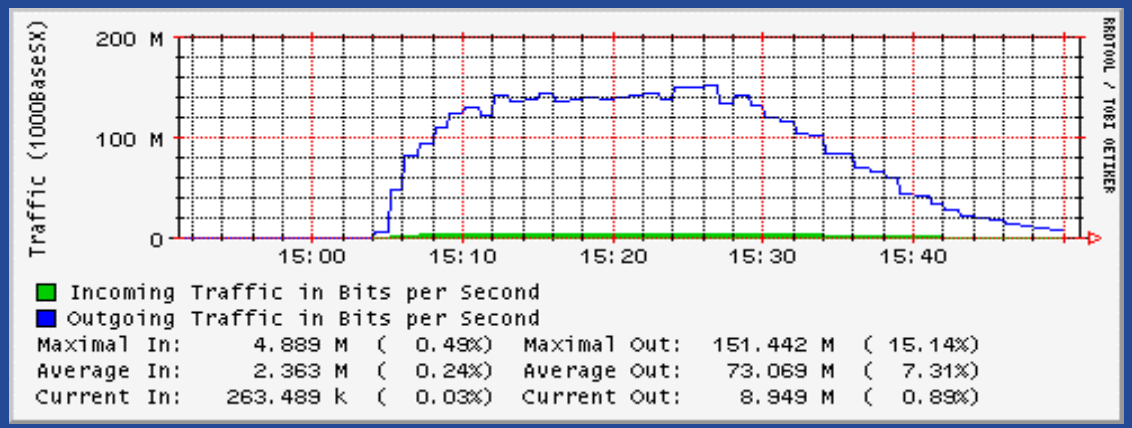
6 clients -> 1 server = 375 Mb/s (1 config.)

Clients : 100Mb/s, Servers : 1Gb/s

# Test results (1/2)

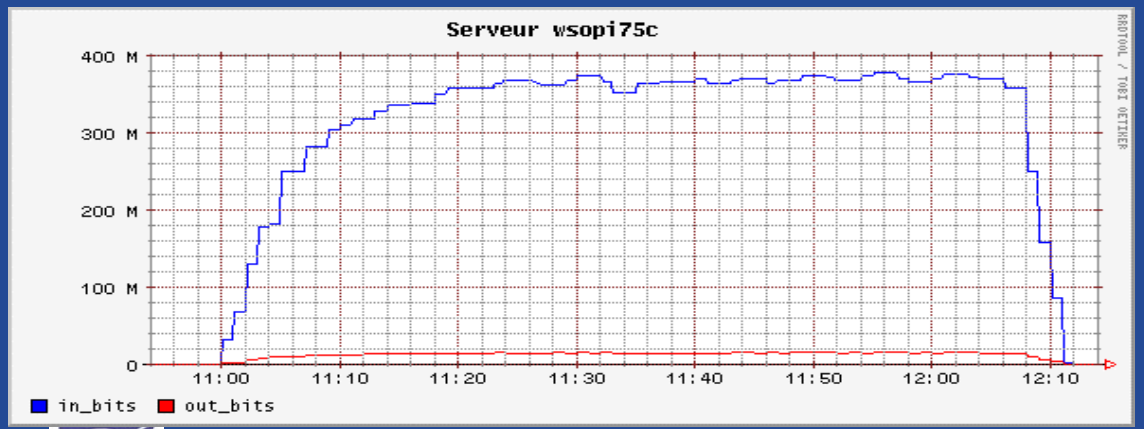
First generation



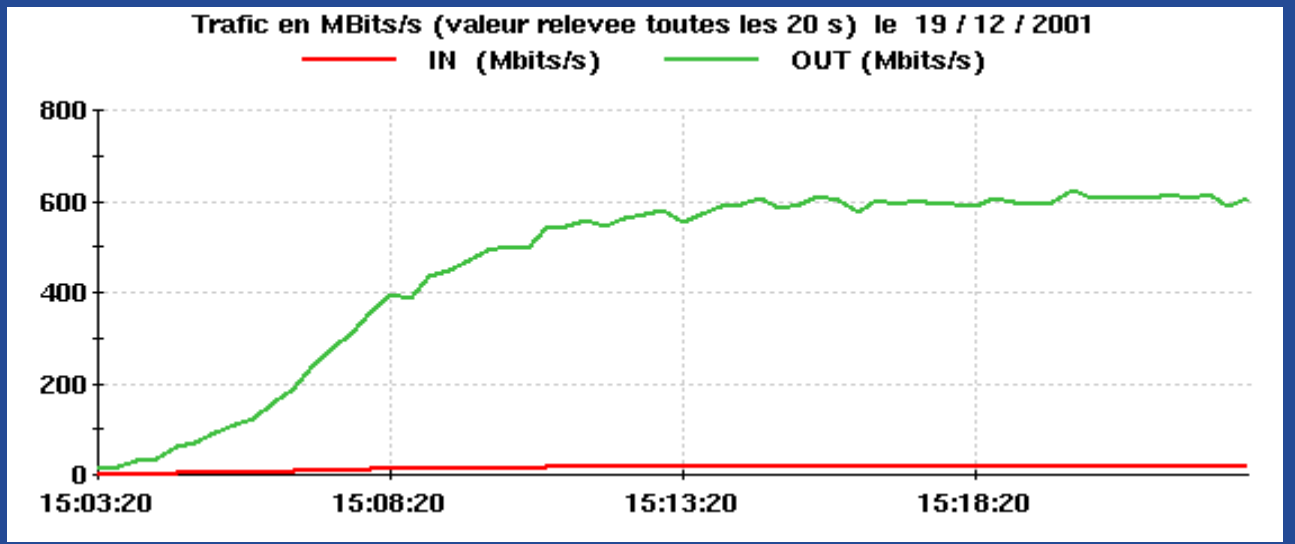

Second generation

Third generation with optimisations



# Test results (2/2)

Test with 5 configurations




# Allegro on VTHD++ platform

## A Multimedia Traffic Generation Tool

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# Allegro

What is Allegro ?

- A tool for generating multimedia traffic (audio and video)

It includes:

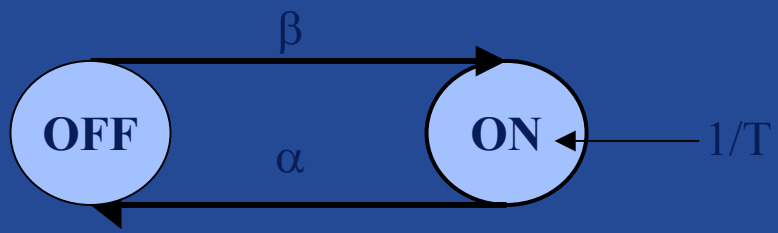
- a traffic simulator for audio et video
- a traffic generator for UDP
- a graphical user interface
- a monitoring tool

# Allegro, the audio simulator

How to model Audio traffic ?

- ON-OFF model:

  ⇒ alternate between emission at constant rate and period of silence.




- IPP model:

  ⇒ the inter-arriving time of packets follows an exponential law.

- MMPP-N model:

  ⇒ can be seen as the aggregation of N sources of an ON-OFF model.

# Allegro, the video simulator

How to model Video traffic ?

- M/G/∞ discrete model:

  ⇒ model the amount of data to transmit per unit of time (called a slot).

- Provide predefined category of films (movies, cartoons, NetMeeting, Web TV, etc.)

  ⇒ Parameter models are based on previous studies made on real traces.

| Film | Codec | Correlation | Size |
|---|---|---|---|
| Wizard of Oz | MPEG2 | $e^{-0.055\sqrt{k}}$ | LogN(4.9 ;0.32) |
| Bean (Low Quality) | MPEG4 | $0.489e^{-0.143k} + 0.511e^{-0.126\sqrt{k}}$ | LogN(8.74 ;0.4274) |

# Allegro: How to use it ?

Definition of scenario:

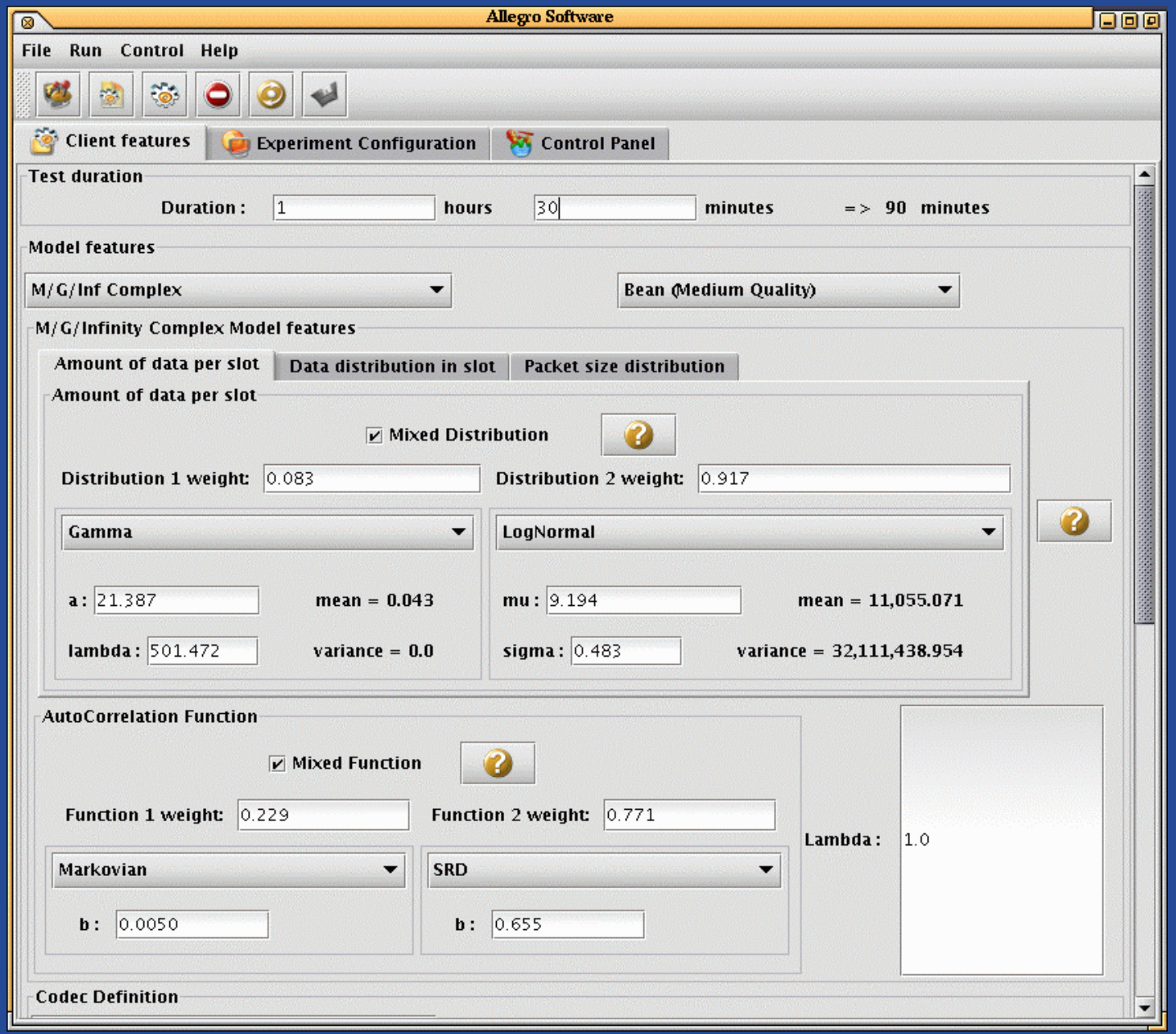
- Select type of flow (Audio, Video)
- Select  number of sources for this flow (creates aggregated flows)

Definition of  machines to use:

- Describe servers and clients.
- Bind flow to a server<->client.

Save it and run it !

➔ A Graphical User Interface simplifies the process !



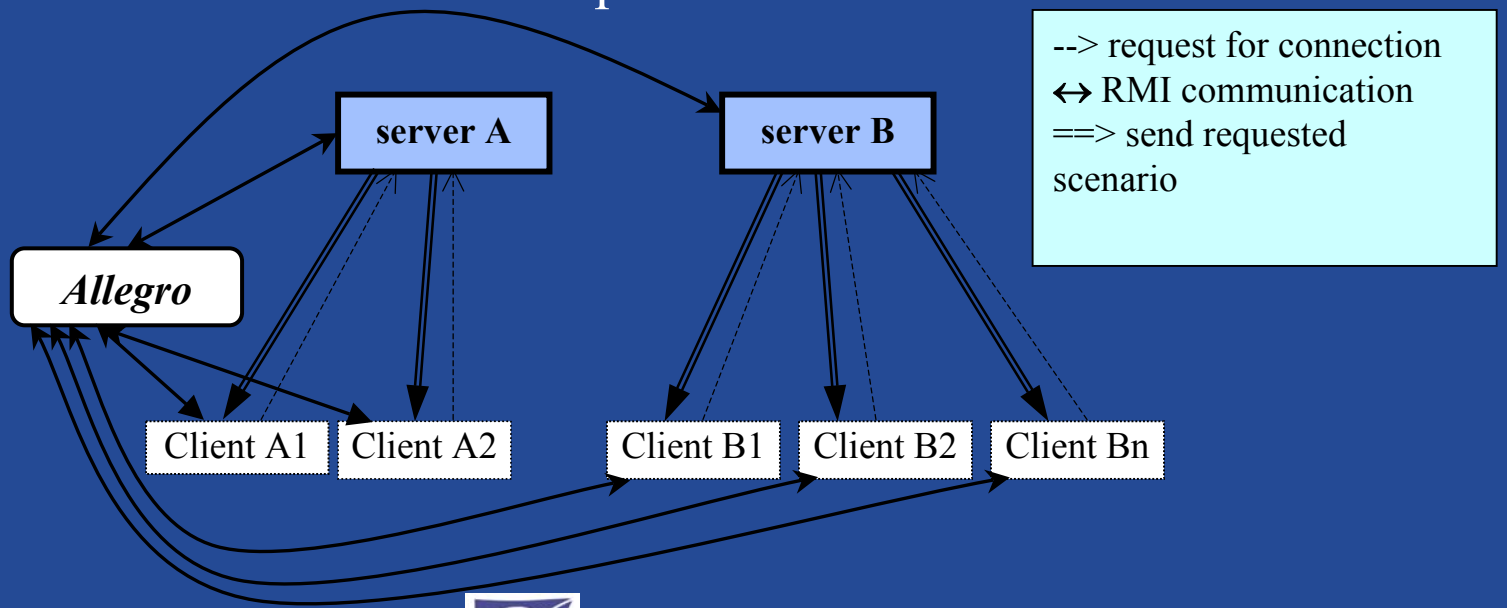

# Allegro

# A snapshot of the Graphical User Interface

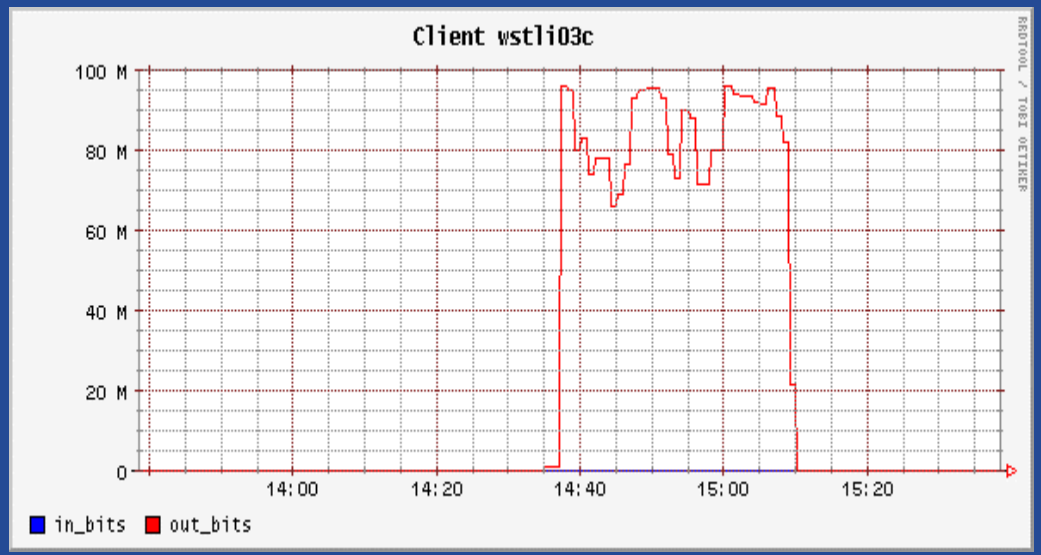
# Allegro : deployment

How does it work ?

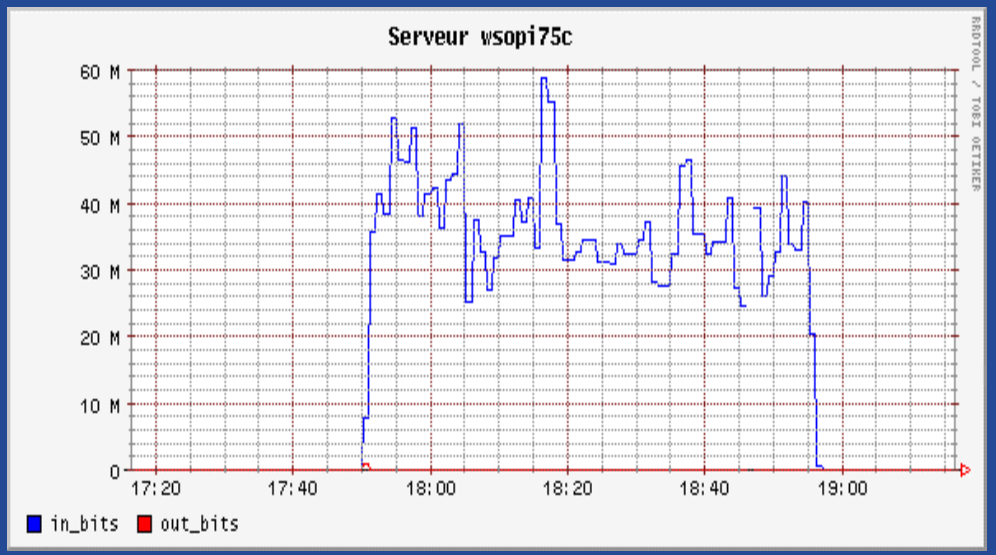
- Allegro opens SSH/RSH connections with all machines involved
- Transmit the scenario files to the servers
- One server and one client are started per connection/flow



# Allegro : Preliminary results




1 server, 1 client for **150** video flows during 30 mn.




1 server, 1 client for **50** video flows during 60 mn.

# Future work...

- More tests with multiple flows:
  - multimedia (Allegro) and Web traffic (WAGON)
  - multimedia, Web and grid computing traffic
- IPv6 support for both applications
- Experiments on a production network
- Make Allegro available