

Pôle COMRED - Mascotte

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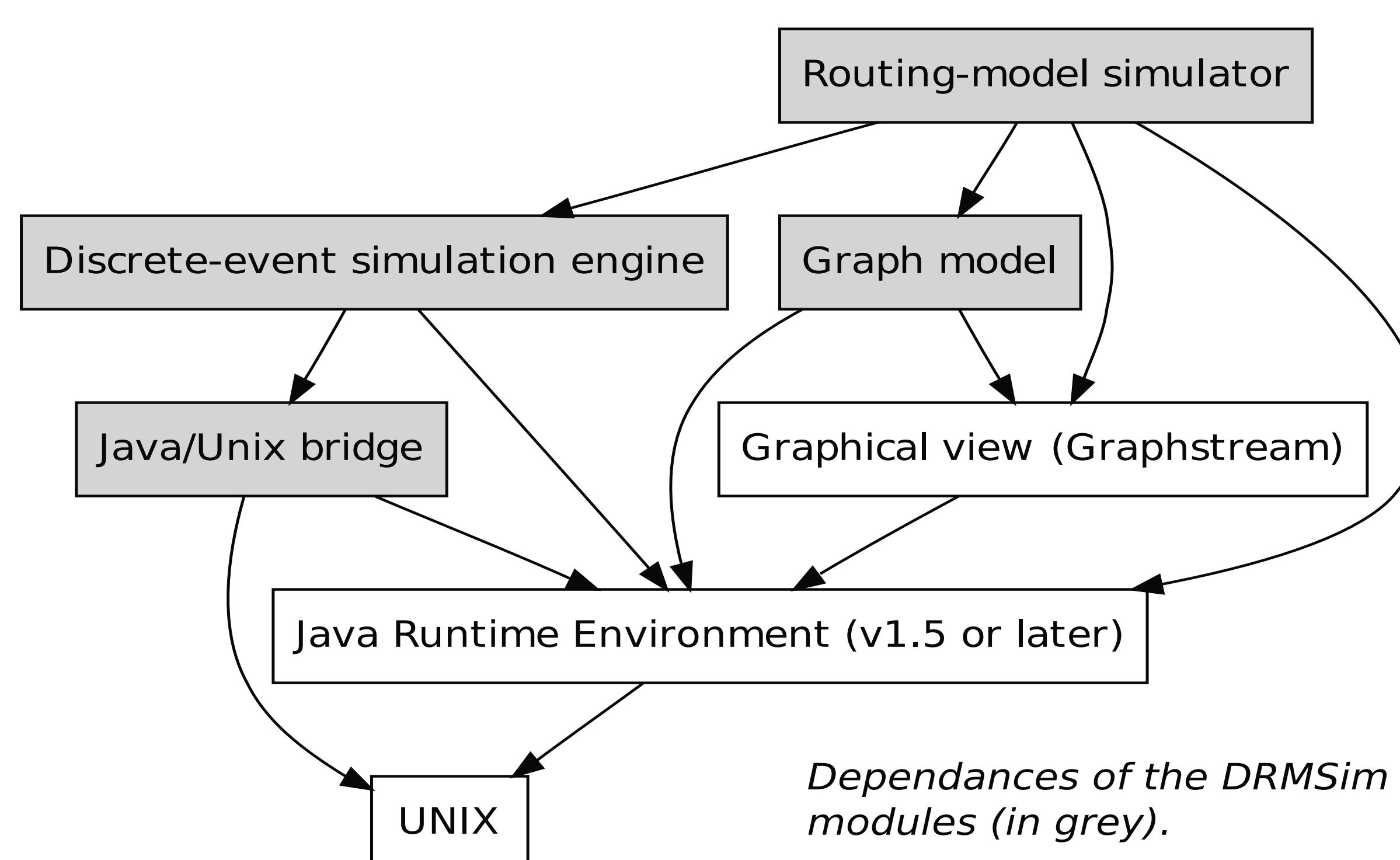
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DRMSim: a Routing-Model Simulator for Large-scale Networks

Today, inter-domain routing in the Internet is achieved by the **Border Gateway Protocol (BGP)**, a routing protocol that matches both technical and commercial aspect of Internetwork routing. Nowadays, Internet backbone consists of more than 30.000 abstract nodes called Autonomous Systems (ASes). This number is steadily growing.

As a consequence, **BGP shows its limits**. In practice, its data structures require too much memory that can be installed on routers and the huge size of routing tables have a negative impact on the computational time required to perform operations on those tables.



DRMSim is a **100% pure Java discrete-event** routing model simulator. Although it can run on any Java 1.5 platform, it features a number of facilities for UNIX computers.

For the modeling of the network, DRMSim relies on **Dipergrafs**: a library dedicated to the efficient representation and the manipulation of large networks.

<http://www-sop.inria.fr/mascotte/projets/DCR/>

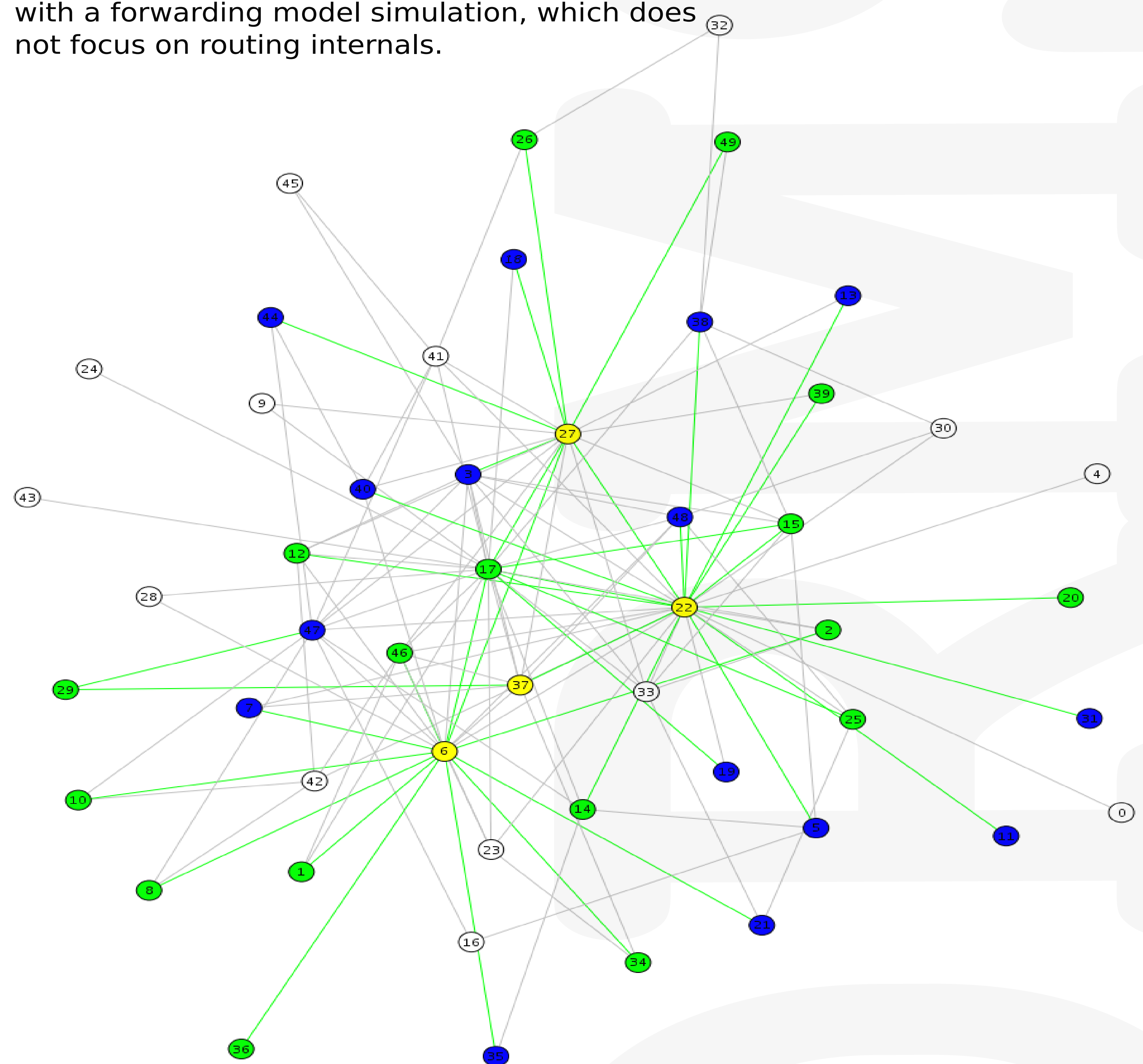
The first applications of DRMSim include the implementation and benchmarking of the **new NSR** and **AGMNT routing schemes**. DRMSim allows Researchers to compare their protocol to **BGP** (to which it provides a lightweight implementation), up to a certain number of nodes above which BGP gets harder to simulate. Then the protocol under investigation can be tested with topologies up to hundreds of thousands nodes (depending on protocol's computational requirements).

DRMSim/BGP was validated by confrontation of its output with the results provided by the SSFNet simulator.

Our Research project, funded by Alcatel-Lucent Bell (Belgium) aims at providing novel (compact) routing schemes for the Internet backbone. Our schemes are designed to **optimize stretch vs size of routing tables and computational complexity in time**.

In order to achieve this goal, we are designing and developing an efficient **routing model simulator called DRMSim**.

Routing model simulation is not to be confused with a forwarding model simulation, which does not focus on routing internals.



DRMSim comes with a set of topology generators. This network was generated using the rules defined by the GLP model.