

OMNET++

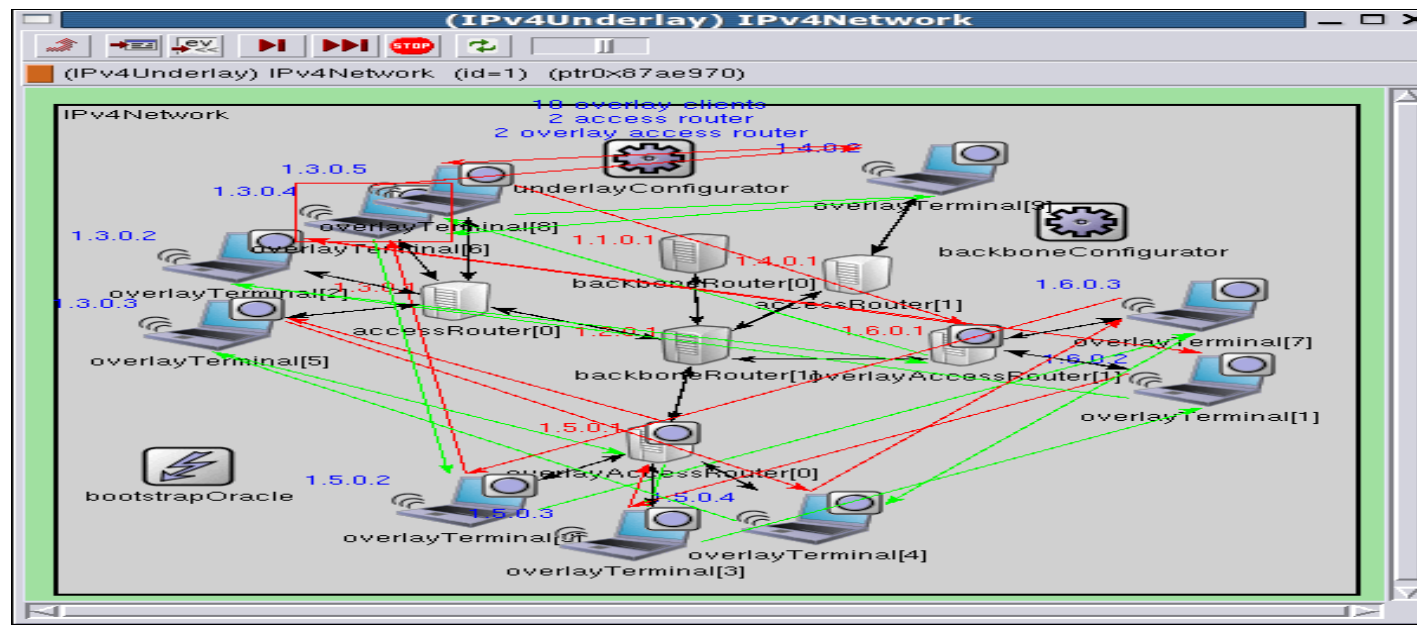
OMNeT++ is an extensible, modular, component-based C++ simulation library and framework, primarily for building network simulators. "Network" is meant in a broader sense that includes wired and wireless communication networks, on-chip networks, queueing networks, and so on. Domain-specific functionality such as support for sensor networks, wireless ad-hoc networks, Internet protocols, performance modeling, photonic networks, etc., is provided by model frameworks, developed as independent projects. OMNeT++ offers an Eclipse-based IDE, a graphical runtime environment, and a host of other tools. There are extensions for real-time simulation, network emulation, database integration, SystemC integration, and several other functions.

Omnet++

- The [INET Framework](#) can be considered the standard protocol model library of OMNeT++. INET contains models for the Internet stack (TCP, UDP, IPv4, IPv6, OSPF, BGP, etc.), wired and wireless link layer protocols (Ethernet, PPP, IEEE 802.11, etc), support for mobility, MANET protocols, DiffServ, MPLS with LDP and RSVP-TE signalling, several application models, and many other protocols and components. The INET Framework is maintained by the OMNeT++ team for the community, utilizing patches and new models contributed by members of the community. There are several INET-based model frameworks, maintained by independent research groups

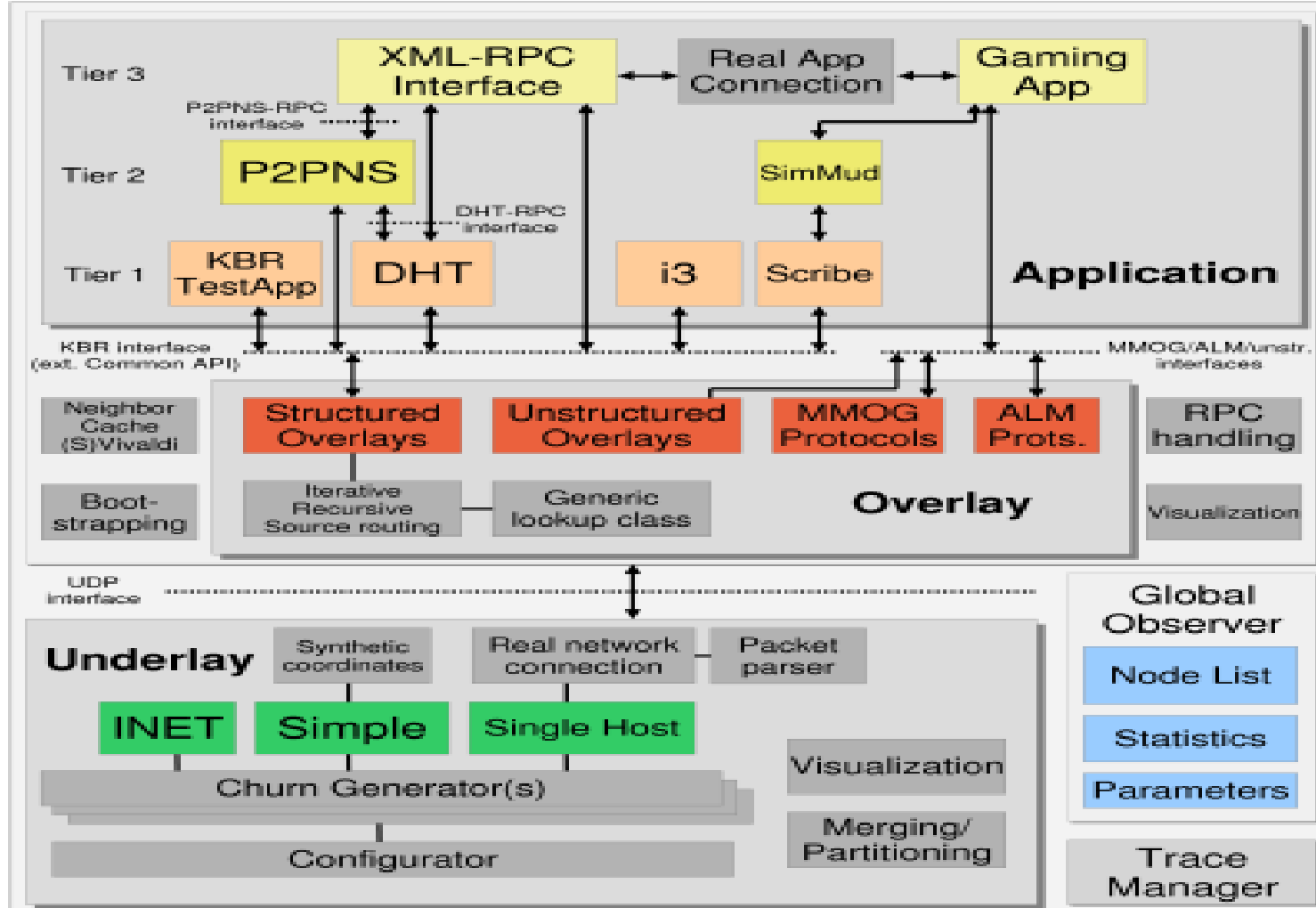
Oversim

- OverSim is an open-source overlay and peer-to-peer network simulation framework for the [OMNeT++](#) simulation environment. The simulator contains several models for structured (e.g. Chord, Kademlia, Pastry) and unstructured (e.g. GIA) P2P systems and overlay protocols



OverSim

- **Flexibility:** The simulator allows to simulate both structured and unstructured overlay networks (currently *Chord*, *Pastry*, *Bamboo*, *Koorde*, *Broose*, *Kademlia*, *GIA*, *NICE*, *NTree*, *Quon*, *Vast*, and *Publish-Subscribe for MMOGs* are implemented).
- **Scalability:** OverSim was designed with performance in mind. On a modern desktop PC a typical Chord network of 10,000 nodes can be simulated in real-time.
- **Churn Models:** The simulator supports different churn models including *LifetimeChurn* and *ParetoChurn*
- **Different Routing Modes:** All implemented KBR protocols that make proper use of the Base Overlay Class support the following routing modes: *iterative*, *exhaustive-iterative*, *semi-recursive*, *full-recursive*, and *source-routing-recursive*



Veins

Veins is an open source framework for running vehicular network simulations. It is based on two well-established simulators: OMNeT++, an event-based network simulator, and SUMO, a road traffic simulator. It extends these to offer a comprehensive suite of models for IVC simulation.



Veins

Road traffic simulation is performed by SUMO, which is well-established in the domain of traffic engineering.

Network simulation is performed by OMNeT++ along with the physical layer modelling toolkit MiXiM, which makes it possible to employ accurate models for radio interference, as well as shadowing by static and moving obstacles.

Both simulators are bi-directionally coupled and simulations are performed online. This way, the influence of vehicular networks on road traffic can be modeled and complex interactions between both domains examined.

Domain specific models for vehicular networking build on this basis to provide a comprehensive framework that is still easy to learn and use.

Veins

