**PadicoTM**

A Communication Framework for Grid

- Component-based communication framework
  - Dynamically composable building blocks
  - Flexible and extensible
- Configurable protocol stack
  - “Best-effort” automatic selection for most cases
  - User-configurable for complex topologies
- Enables all combinations
  - Any middleware over any network
- Supports wide range of middleware systems
  - CORBA: omniORB, MICO
  - MPI: MPICH, YAMPI
  - SOAP (qSOAP), DSM (Mome), HLA, JXTA, JVM, ...
- Supports grid networking technologies
  - High performance networks – through Madeleine: Myrinet, Quadrics QsNet, Infiniband, SCI
  - Wide area networks – firewalls traversal, parallel streams, ...
- Usable through various API
  - Virtual sockets – for legacy code
  - Virtual Madeleine – for efficient MPICH-Mad over PadicoTM
- Pluggable communication methods
  - Firewall traversal: TCP splicing, SSH tunnel
  - Compression: ZIP, LZO, adaptive ZIP (AuOC)
  - Parallel streams: for high bandwidth on WAN
  - Security: TLS, SSL, SSH tunnel
  - Message routing

**MPICH/Madeleine**

MPI for Clusters of Clusters

- MPI implementation for clusters of clusters
  - Derived from MPICH
  - Supports heterogeneous networks
  - Multithreaded communication engine
  - Very high performance
  - Usable over PadicoTM or directly over µPM2
- Supports grid networking technologies
  - High performance networks through Madeleine: Myrinet, Quadrics QsNet, Infiniband, SCI
  - Deployment tools tested over Grid'5000 allowing to run applications on multi-sites clusters

**Software available**

- Download software from:
  - PadicoTM: http://runtime.futurs.inria.fr/PadicoTM/
  - MPICH/Madeleine: http://runtime.futurs.inria.fr/mpi/

**High performance**

- Reach 96% of the hardware bandwidth on Myrinet, Infiniband or Quadrics
- Bandwidth actually available for MPI and CORBA
- Low latency CORBA and MPI (< 9 usec.)

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**Project RUNTIME**

Efficient runtime systems for grids

http://runtime.futurs.inria.fr/