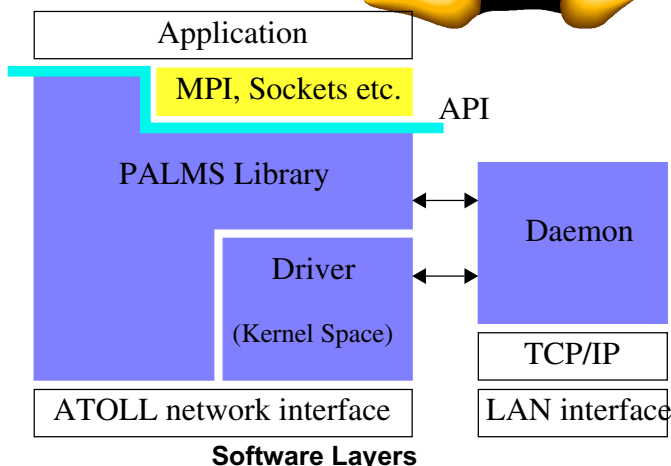
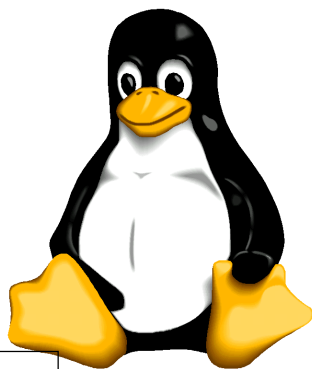


MPICH2 PALMS on ATOLL



LINUX based System
open source software



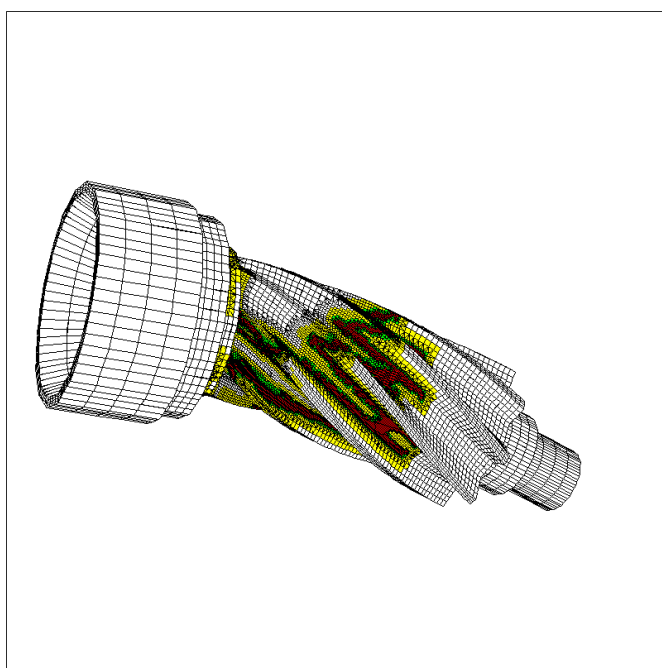
There are several Software Libraries that allow User Applications to get access to ATOLLs outstanding communication performance. The figure *Software Layers* shows the different parts of the PALMS package.

PALMS is a message-based communication system for the ATOLL interconnect. The objective of this software packet is to provide a reliable, high-bandwidth and low-latency communication path between nodes within a cluster.

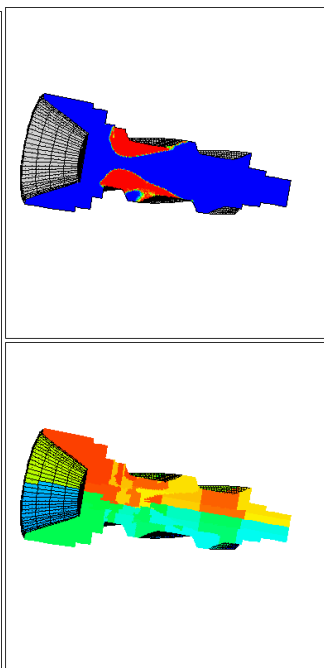
The PALMS Library provides the PALMS API to the software layers on top of it. The API may be used by user applications directly, but usually it will be used by "middleware" libraries like MPI or sockets. The library implements a direct user-space communication with the ATOLL device, giving the applications the full ATOLL performance and functionality.

The ATOLL Driver performs basic control operations on the ATOLL network interface. It has control over all ATOLL resources, and is responsible to assign host ports to applications.

The ATOLL Daemon performs basic cluster management tasks: it constantly explores the cluster topology and creates and adapts routing tables. It is generally responsible for all fault-tolerance and deadlock resolving measures.



CAD Geometry with simulated forces running on UG



The **Message-Passing-Interface (MPI)** specification is the industry standard in scientific high performance computing. One of the most popular implementations currently is MPICH. We have an ATOLL channel device implementation for it's successor, **MPICH2**.

A prominent example of scientific MPI code is the UG environment (A *Distributed Simulation Framework on Unstructured, Locally Adapted Meshes*) from the IWR, University of Heidelberg. UG runs without modifications on MPICH2 for ATOLL, and has also been ported on top of PALMS.