

Introduction to Sphere SP/MP and μ nOS

Overview

Miray offers an operating system platform for 32-bit processors, consisting of three modular layers. These three layers are, from bottom to top, *Sphere SP*, *Sphere MP* and μ nOS. In each case the higher level layer contains the subordinated layer completely. The advantages of the same kernel can so be used in an optimally suitable stage. Furthermore, all of the three layers and in particular the kernel are developed especially for making use of modern processor architectures. Characteristics like multi-threading, kernel- and memory-protection are not just supported, but form the basis of the operating system concept of *miray*.

Sphere SP

Sphere SP is an extremely small operating system for applications that run completely within one single address space (process). While unlimited use of multi-threading is possible, there is no physical separation between different parts of the application. The main intention of *Sphere SP* is to provide as little overhead as possible and optimal use of resources in a tiny kernel, even for large applications. *Sphere SP* allows to completely control the full spectrum of performance of modern processors. Beyond that *Sphere SP* offers hard real-time with high performance for all system calls, i.e. even for the creation of threads and dynamic memory management. Its scalability is architecturally unlimited. It's only restricted by the used processor platform and the available amount of memory.

Sphere MP

Sphere MP offers all characteristics of *Sphere SP* supplemented by the ability to run programs in separate processes. Thereby these are physically absolutely separated, so that errors of one process can't impair the remaining processes. This especially makes sense if the application consists of several, partially independent individual programs. In addition *Sphere MP* provides libraries that support the implementation of a client-server-architecture. This architecture allows to offer services to applications very efficiently and flexibly, not only local but also distributed within a network.

μ nOS

μ nOS is based on *Sphere MP* and provides the full spectrum of its abilities. Additionally μ nOS uses the possibilities of the client-server-architecture by offering many standard servers, e.g. for graphics, windowing or storage. Thereby it represents a powerful basis with GUI and graphic components that enables fast development of high level applications and servers. Additional servers can be easily implemented and existing ones can be omitted if not used. So μ nOS can be optimally aligned to the requirements of the application. A wide spectrum of drivers for standard hardware and libraries extend the possibilities of use and the efficiency in development.