

The goal of this master thesis is to extend HelenOS operating system with the support for ccNUMA hardware.

The text of the thesis contains a brief introduction to ccNUMA hardware, an overview of NUMA features and relevant features of HelenOS (memory management, scheduling, etc.).

The thesis analyses various design decisions of the implementation of NUMA support -- introducing the hardware topology into the kernel data structures, propagating this information to user space, thread affinity to cores and nodes, memory allocation policies, load balancing, etc.

The thesis also contains a prototype implementation of ccNUMA support in HelenOS for the AMD64 platform and a brief evaluation and comparison with ccNUMA support in other monolithic and microkernel-based operating systems.