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The WNoDeS Cache Manager, an efficient method to self-allocate virtual resources

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The WNoDeS software framework (<http://web.infn.it/wnodes>) uses virtualization technologies to provide access to a common pool of dynamically allocated computing resources. WNoDeS can process batch and interactive requests, in local, Grid and Cloud environments.

A problem of resource allocation in Cloud environments is the time it takes to actually allocate the resource and make it available to customers. WNoDeS, for its resource scheduling and allocation tasks, uses an underlying batch system. The time to allocate resources is therefore dictated by this batch system, by its configuration, and by site-specific peculiarities.

Interactive access to resources is supplied by WNoDeS in two ways: a Web-based application, and a command line interface, called the Virtual Interactive Pool (VIP). Both of them interact with a central component, the WNoDeS Cache Manager (CM), providing the actual resource allocation.

The CM, the topic of this poster, has been designed to speed up the allocation of virtual machines, be they requested via the Web-based application or via the command-line interface. The CM keeps a cache of ready-to-use virtual machines, matches them to user requirements and makes them readily available for consumption.

We will show how the adoption of the WNoDeS CM speeds up considerably resource allocation, thereby significantly improving user experience in the self-allocation of virtual nodes used for Cloud computing, or for the self-instantiation of machine pools used, for example, for physics analysis. We will then show how the CM is being used in the WNoDeS installation at the INFN Tier-1 located in Bologna.

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