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### Checkpoint support for PVM in the Hungarian ClusterGrid

In the Hungarian ClusterGrid environment long-running parallel applications cannot be executed due to the day-night working mode of the contributing PC clusters. To solve this problem, MTA SZTAKI LPDS introduced a service-oriented checkpointing system that does not need any support from the underlying job scheduler on the clusters. The broker on the upper level only deals with transferring checkpoint information among the clusters. The checkpointing system enables PVM applications to be suspended before the system goes down in the morning and to be continued when any cluster comes back in the evening. The checkpointing support is transparent and does not need any user interaction or code modification. Our solution increases the robustness of the ClusterGrid significantly, too. When a cluster is lost with all the applications, periodically checkpointed applications can be continued from the last valid state on any other resource. With some improvement of the broker algorithm there is possibility to dynamically migrate checkpointed applications on demand to optimise the load of the clusters in the ClusterGrid.