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Lab 2 – Prototype Milestone Description

The server hardware milestone for the prototype of Current ITS will actually be software – specifically virtual machines. These are virtual servers controlled by a hypervisor on the backend, each with virtual hard disks, network adapters, memory, and virtual processors. All of Current ITS will be hosted thusly. The backend hypervisor for Current will be Vmware esxI 5.0, which is configured in a cluster with other VMware Vsphere hosts to ensure high availability of our virtual machines, even in a disaster scenario. These hosts are actually Dell Poweredge r910s. Each virtual machine will be provisioned with at minimum 2 virtual CPUs, and 8 GB of vRAM. This can be modified on the fly to ensure maximum application performance. Hard disk space will be essential to house the extensive database backend, and as such a minimum configuration of at least 50 GB will be provisioned. This can be extended as needed. For networking, a minimum of 2 1 gigabit Ethernet interfaces per virtual machine, teamed together to ensure network latency is kept to a minimum and that the Web application servers and database have enough bandwidth to run without issue.

Each of these virtual machines will be running Centos 5, with appropriate user access control and directory services enabled. This prevents unauthorized access to sensitive project data, and prevents data loss. Furthermore, all VM disk data will be snapshotted on the CS dept. EMC NAS device, to ensure that even in a catastrophic failure, recovery will be possible. The VMs will be configured to hold the database, decision engine, and web application engine elements of the prototype. The 2 virtual machines will be set up to mirror each other, with a third for load balancing and achieving high availability. This ensures that our web services will keep running in the event of a failure.

Figure 1. Simplified Entity Diagram of VM setup.

**WWW**

EMC NAS

(iSCSI)

ODUCS

NAT

ODU CS

Network

VMware EsxI 5.0 Hypervisor

410Red VM 1…N

410Red VM 1…N

410Red VM 1…N

410Red VM 1