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Object name: TestGrid

Vintage: c. 2006

Synopsis: Virtualised replica Grid for test and porting activities.

### Description:

The computational grid for Ireland, *Grid-Ireland*, was established in 1999. By 2006 it included 18 grid sites. Each site had a point-of-presence known as a *Grid Gateway*. These virtualised all the necessary grid services, which were centrally deployed and managed from an *OpsCentre* in the Dept.Computer Science, Trinity College Dublin.

The frequent updates to software, from kernel or security patches to OS or grid middleware upgrades had to be tested, but this could only be realistically done on a good approximation to a working Grid. Once Grid-Ireland had virtualised the grid services, it was able it to build a virtualised replica Grid specifically for the purpose.

TestGrid consisted of about 40 very basic compute nodes in one of a set of racks known as the OpsCentre racks, plus a range of scattered porting targets.



The Operations Centre machine room at TCD

1	VR engine	2	Shared cluster	3	RAID servers, log server, etc.	4	TestGrid testbed	5	National servers, TCD gateway
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Figure 3: csTCDie OpsCentre Racks, TestGrid rack second from right  
Left: Dr.Brian Coghlan, right: Dr.Stephen Childs

Each of the 40 nodes was a Tyan Tomcat i875PF motherboard, with a Pentium 4 CPU, 2GB memory, an 80GB IDE disk, and 2 x 1Gbps Ethernet interfaces, assembled into a 1U rack chassis, and so not of any special interest. What is interesting is the way in which such a simple set of nodes was able to replicate Grid-Ireland in almost every respect except performance.

Virtualisation was one key to this, but the other was the adventurous use of the Linux networking software to host a replica in a self-contained network which used the same system and network configurations as on the real infrastructure. This gave a controlled environment for experiments and allowed sysadmins to test deployment of services using *exactly* the same configurations as used on the production infrastructure.

The details are complex and best understood by reference to the papers in the associated folder of this catalog.

Grid-Ireland and its OpsCentre became a casualty of the economic crash of 2008, and both were gracefully closed down on 31-Dec-2012.

#### **References:**

1. Wikipedia: <http://en.wikipedia.org/>
2. Childs, S., Coghlan, B., Walsh, J., O'Callaghan, D., Quigley, G., Kenny, E., *A virtual TestGrid, or how to replicate a national Grid*, ExpGrid workshop at HPDC2006, Paris, June, 2006, pp47 – 54.
3. Childs, S., Coghlan, B., O'Callaghan, D., Quigley, G., and Walsh, J., *The Second-Generation Grid-Ireland Deployment Architecture with Quattor Centralised Fabric Management*, Proc.Cracow Grid Workshop 2005, Crakow, Poland, November, 2005, pp114 – 123.