

Finance and Resources Committee 27 January 2011

Report on HPC's Minor Disaster Recovery invocation 13 November 2010

Executive summary and recommendations

A local area power failure in the Kennington area over the weekend of 13<sup>th</sup> November 2010 resulted in a partial invocation of HPC's Disaster Recovery (DR) plan, to maintain a publically available register and allow normal work to take place on Monday 15<sup>th</sup> November.

**Decision**

The Council/Committee is requested to note the document. No decision is required.

**Background information**

HPC's Disaster Recovery Plan. HPC's Risk Register

**Resource implications**

No immediate requirements determined, but changes to existing systems may be required.

**Financial implications**

No long term costs, but some operational expenditure when running future tests.

**Appendices**

None

**Date of paper**

17 January 2011

## **Minor DR invocation - Kennington area power failure, 13<sup>th</sup> November 2010**

A power failure occurred in the Kennington area on Saturday 13<sup>th</sup> November between approximately 17.15 hrs and 19.52 hrs (determined by the offline time of the CCTV system). This impacted the Park House (PH) and Stannary Street sites.

Back up systems and processes are in place, and these functioned as required. No long term damage to systems was incurred.

Critical computer systems are supported by Uninterruptable Power Supply, (UPS), continually charged by mains power. These devices (UPS) are essentially large batteries with various levels of additional functionality. UPS provides a limited amount of power support for systems dependant on load and time. The UPS provides battery power seamlessly following a main power outage.

As mains power was down for over two hours, servers initially protected by the inline UPS were offline. Our Internet Service Provider (ISP) Rackspace monitor our NetRegulate systems, and inform the IT contact point, if system issues are discovered. IT did not receive notification of any issue on Saturday 13<sup>th</sup> as the email system was down by the power failure.

On Sunday 14<sup>th</sup> November at midday, Rackspace escalated the warning notification to HPC IT by telephoning the Escalation list.

The IT team once alerted brought the Online Register and Online Renewals websites back online. Internal HPC sensors warned of high temperatures in the HPC server room undoubtedly due to the failure of the air conditioning units. A decision was taken to keep the remaining IT systems shutdown to contain the temperature and to bring them back online before the start of normal business hours on Monday 15.

At approximately 4.45pm on Sunday the Director of Operations was alerted by the Director of IT that the server room temperature was elevated, and had reached a critical level, that could damage the server hardware. Director of Operations contacted the Facilities Manager, who in turn arranged for the Caretaker to attend the building. Upon investigation it was determined that the server room temperature was optimal, and the temperature sensor was likely to be malfunctioning and reporting against the peak temperature reached.

On Monday 15<sup>th</sup> the IT department attended the office well in advance of business hours, to restart systems ready for 8am.

NetRegulate was switched entirely to Rackspace (Option 2), by 8am Monday 15<sup>th</sup>

(It was subsequently switched back to load balanced mode (Option1 in the diagram on Thursday 18<sup>th</sup> November.)

Under normal conditions, NetRegulate functions under Option 1 (see diagram below).

### **Initial response to local servers being down.**

The IT department placed an additional icon on all users desktops, with a direct link to the NetRegulate servers at Rackspace, Slough. This enabled the internal departments to continue day to day operations, accessing, viewing and updating applicants and registrants records on the duplicate dataset at Rackspace. The HPC register was online, and up to date.



### **Systems available on Monday morning following server “reboots”.**

File and print  
Blackberry Enterprise Server  
Lotus Notes email / Domino  
HRInfo/PPWin Human Resources system  
Sage Finance

### **Systems not available with Option 2**

As the Crystal Reports data is extracted nightly from the Park House NetRegulate database, and the live data were now residing solely on the Slough based servers, the data transfer time (Slough to London) would be excessive for this particular function. Therefore the Reporting system was not available whilst DR was partially invoked. Crystal Reports data were available again from close of play Thursday 18<sup>th</sup> November.

All systems other than the Crystal Reports were available from 8am Monday 15<sup>th</sup> November (HPC business hours).

### **Issues highlighted to be resolved.**

Rackspace did not manage to contact HPC when servers were initially offline toward the end of the power outage on the 13<sup>th</sup> as the alerting system is via email. The email server was down, so messages did not get through to the IT staff members. Rackspace will now telephone the appropriate IT contacts on the Escalation list if issues are located. 24 hour monitoring is a requirement of our contract.

The software for the monitoring of the internal HPC server environment has now been reinstalled and the temperature sensing reports correct values.

Minor difficulties were incurred with batch processes after the incorrect username was used to restart some NetRegulate services at Park House. Documentation has been updated to prevent this issue recurring.

Data replication services between Park House and Rackspace were originally configured to ensure what was on the PH servers also existed on the Rackspace servers. In this particular scenario, new files created by batch processes at Rackspace did not exist at PH, so were deleted by the replication system. The replication process will be modified under this particular scenario in future.

The automatic restart of services following power supply resumption will be investigated, but requires considerable scenario modelling and testing to ensure damaged systems are not made live.

The Facilities department have already determined that the local power provider is unable or unwilling to notify major customers when loss has occurred.

IT are evaluating automated processes to shut down systems and servers elegantly, if mains power remains offline for more than 10/20 minutes.

Automated alerting systems can send out email and or text messages to those responsible for Disaster Recovery/Business Continuity in the event of prolonged outage or fluctuation, whilst systems are still supported by the UPS.

This will enable the NetRegulate services to be switched remotely from Park House London shared with Rackspace Slough, to Slough only.

At no point was the website [www.hpc-uk.org](http://www.hpc-uk.org) down. The online renewals and register were temporarily down until switched by the IT department to point at the Rackspace servers.

#### **Lessons from the DR invocation:**

Server room environmental monitoring systems sensors are to be tested and a process for checks to be instigated in the server room. It is believed the server room temperature reached 32°, before returning to 20°C when power was restored.

Whilst it may be desirable to include extension of the Building Management Systems from the new Stannary Street building into critical parts of the HPC infrastructure it is too costly. Other mechanisms (server room monitoring by IT equipment) will suffice.

Software that shuts down systems after a mains power failure is in place and software will in future alert IT before any shut downs occur.

Resolution.

**PowerShute software has now been installed and configuration of the software to alert the team of a power failure and shutdown servers gracefully is planned.**

Existing BCM plans worked well, however direct Blackberry based email traffic was curtailed by the Blackberry server being down in the first instance. Automated fail over to the replicated system should be investigated. Blackberry devices still functioned as mobile telephones.

External systems that allow conference calling via Blackberry phone functionality are being investigated. This may have shortened the chain of telephone calls that occurred on Sunday afternoon, 14<sup>th</sup> November.

Remote switching of the register to reflect Rackspace based data can be established with little difficulty by the IT team.

NetRegulate operates from the Rackspace hosted data at sufficient speed to allow Call Centre traffic to be dealt with adequately.

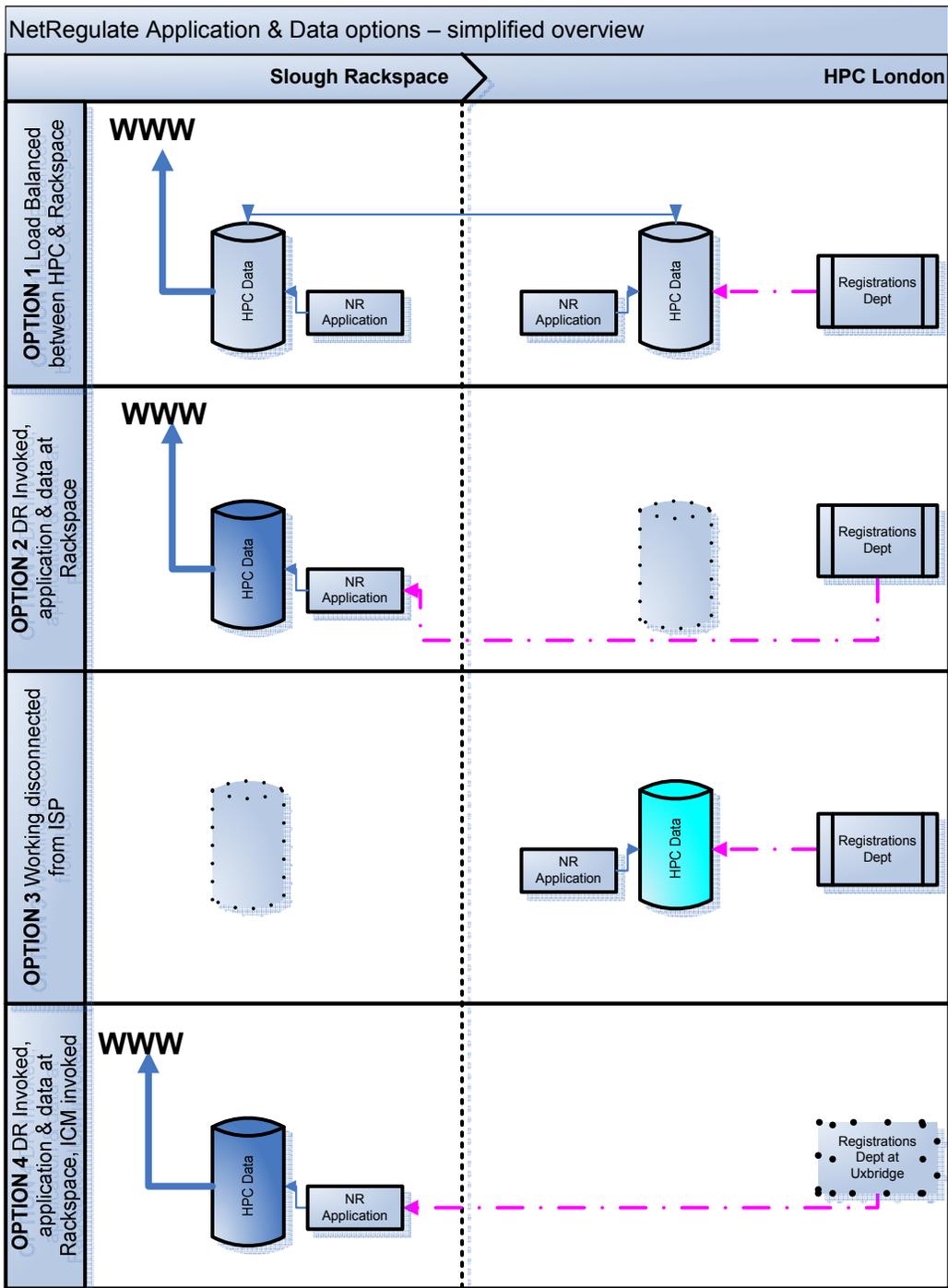
### **Conclusions**

Power failure in the local area has again tested the business continuity processes used by HPC. Fortunately the initial power failure was of relatively short duration, and was at the weekend, avoiding major disruption to the organisation.

Almost 100% of systems and services were provided by the Monday morning after the power failure, following out of hours working by the IT department.

If the power failure had been prolonged, employees would have to be relocated to Uxbridge, or other ICM offices, worked from home or newly located office space.

Power failure thus remains a High Risk on HPC's risk register.



Appendix 1 Incident Time line from IT Dept

**Overview of outage**

**Saturday 13 November 2010**

Power outage at 17:15 hrs, restored at 19:52 hrs.

The UPS maintained power to all IT systems until 19:10. hrs

Rackspace monitoring raised a failure ticket at 19:25 hrs and investigated the issue

**Sunday 14 November 2010**

Rackspace initiated the Escalation procedure and called HPC IT team at 12:30 hrs

The Online systems were placed into DR and brought online at approximately 15:00 hrs

All other systems were powered down after receiving temperature warnings within the server room

**Monday 15 November 2010**

All remaining systems including email were restored prior to 08:00 hrs

NetRegulate remains in DR

**Tuesday 16 November 2010**

NetRegulate application server recovered to the Kennington environment

**Thursday 18 November 2010**

NetRegulate database is recovered to the Kennington environment