Incident Report: West Cambridge Power Issue 23/02/2015

Background

On Monday 23rd February at approximately 20:17, a power event was experienced at the West Cambridge site.

The UPS-protected services at the West Cambridge Data Centre and Roger Needham Building detected the event and kept the facilities online via their battery backups.

The power system within the Soulsby facility detected the power event and switched the server room to the UPS power feed. Unlike previous power event, no breakers tripped at the Soulsby site (a significant step forward).

It is currently the belief of the Estates Management team that a second power outage (less than a second) was experienced after the first, which caused the air handling units to go offline. After running for 30 minutes without air conditioning the room temperature exceed the defined threshold and an automated thermal shutdown was initiated by the building management system.

The site was visited by members of UIS and the Estates Management team to bring the facility back online.

Outages to a number of key UIS, Library and Astronomy systems were experienced as a result of the power loss.

Timeline of Events

TIME	INFORMATION
Monday 23rd February	
20:17:33	Power event experienced at the West Cambridge site
20:17:33	Power distribution systems detect mains power issue and supplies power from UPS batteries.
	Air handling units not on UPS went offline, room temperature begins to rise
	Mains power state restored to the West Cambridge site
	Air handling units come online
	Second power event / brown-out experienced
	Air handling units go offline
	Mains power state restored to the West Cambridge site
	Air handling units remain offline
20:49	Critical temperate alerts received from a number of systems
21:02:26	BMS initiates UPS thermal shutdown and all systems go offline
21:50	Call from Security reporting power event (loss of network connectivity & telephony)
22:20	Roger Needham Building (MER) checked and unaffected.
22:30 – 23:00	Attempts made to contact UIS staff and inform them of the situation.
22:55	Central Network Hub (new museum site) checked and unaffected.
23:05	Security phone re-routed to BT hard line.
23:40	Soulsby site attended and determined to be offline.
23:56	Security asked to contact Estates Management duty tech.
	UPS manually started
	Air handling units online
	Power distribution units back online
Tuesday 24th February	
00:30	Systems restart commenced
00:30 – 02:00	UIS infrastructure brought back online.
	Estates Management duty tech visited the Soulsby.
00:38	Communication sent to Library and Astronomy
00:53	Email communication sent to UIS staff mail list informing them of power outage and requesting owners to check systems.
01:16	Message sent to Database team lead making him aware of outage.
07:30 -	Investigation and resolution of individual system issues as and when reported system owners.

Impact

A number of UIS, Astronomy and Library systems were affected by the power issue at the Soulsby facility, these included:

EDM	Application offline until 07:45 (24/2/15)
Apex	Application offline until 01:00 (24/2/15)
Digitary	Application offline until 01:00 (24/2/15)
CamCORS	Application offline until 01:00 (24/2/15)
CARD	Application offline until 01:00 (24/2/15)
Pensions	Application offline until 01:00 (24/2/15)
CHRIS	Application offline until 01:00 (24/2/15)
UFS	Available via WCDC (one app server plus dev environment offline until 08:30)
CamTools	Application offline until 01:00 (24/2/15)
Moodle	Available via WCDC (one app server offline until 01:00)
CamSIS	Application offline until 07:45 (24/2/15)
ICE Website	Application offline until 09:20 (24/2/15)
UAS Email	Application offline until 00:38 (24/2/15)
By-the-rack hosting	Service restored at 00:35 (24/2/15)
Falcon	Interruption to 46 of 228 live and 18 dev site until 22:35 (23/2/15)

CamSIS and the EDM system were unavailable until approximately 07.45 on Tuesday when the required storage resources were re-mounted and applications restarted.

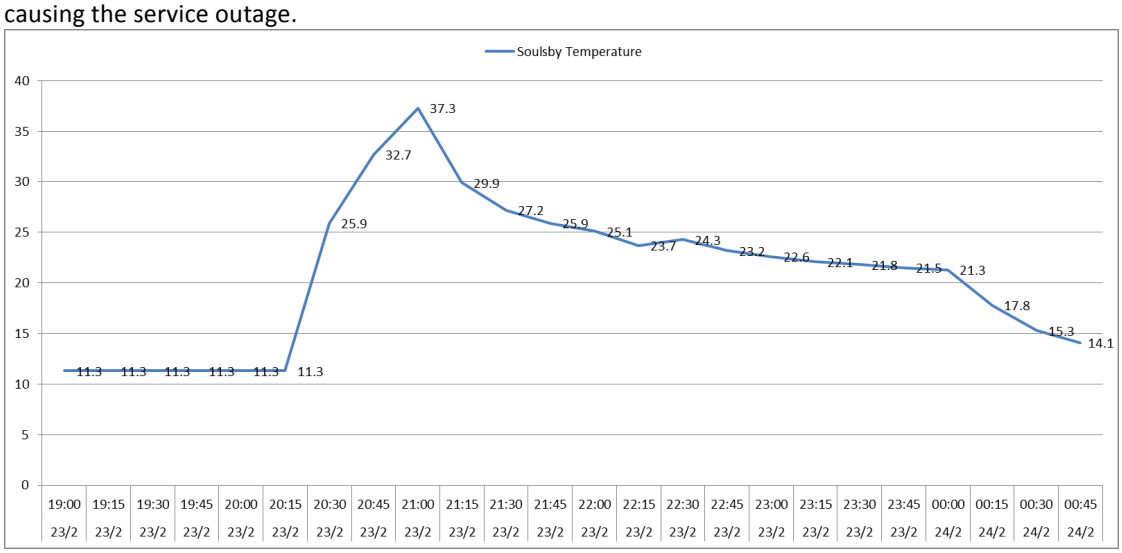
Astronomy also reported that two systems were unable to boot following the power event and one drive failure.

The Library reported one drive failure and a small number of systems which needed manual intervention.

Investigation

Following the main power event a second power event occurred (lasting less than one second). This second power event caused the air handling units to go offline, which was not detected by the Aircon controller unit (which has its own UPS).

Once the room reached a pre-defined critical temperature, the building management system switched off the power, causing the service outage.



Recommended Action

1. Reconfigured BMS to send a stop / start to the air handling units when a new critical temperature level is reached. Recommended workaround to ensure air handling units are online.
2. Document process for manually restarting UPS following a thermal shutdown.
3. Configure BMS to alert UIS prior to thermal shutdown.
4. Investigate automated alerting (SMS messages to UIS).
5. Investigate moving one or more of the air handling units onto UPS.
6. Deploy IP-temperature probe and configure alerting based on defined threshold.
7. Investigate the deployment of a SRST gateway device to route security calls via PSTN / ISND in the event of an IP failure.
8. Review requirement for out of hours support / on-call.