i140818 PC HOME AFFAIRS

DHA Service Outages

1 Friday, 10 August 2018 – Power Failure at SITA Centurion

1.1 Background

According to SITA Core switch the power outage after 02:00 in the morning till 08:00, meaning everything was off, even the lights. As a result of this outage, the following critical services were not available:

- Transversal systems such as BAS and PERSAL
- Mainframe MCS (Movement Control System) used at the Ports of Entry
- Live Capture for Smart Identity Documents and Passports
- Live Capture for Birth, Marriage and Death
- E-mail system
- DHA Website
- National Population Register
- HANIS used for storing fingerprints and photos

When generator power came back at 08:00, albeit on limited power. The Live Capture server room on Floor Minus 2 (-2) had full power though. The DHA team started to restore Live Capture services from 08:30. Live Capture Services are AIX, DB2, MQ and Virtual Machines which consists of Windows and Linux servers. The whole Live Capture environment was up at about 09:30.

Incomplete DHA Service Restoration

Even though the Live Capture system was up the Mainframe systems were not up. Mainframe systems consists of NPR and other transversal systems such as BAS, PERSAL and MCS. Live Capture is dependent on NPR to fully function. Therefore, Live Capture was not up. Other Home Affairs services which resides in Floor -1 were not 100% up as they had limited power, which meant they only had power from one power feed instead of two. That resulted in all of them being down. Services like GroupWise (Mail), BAUD (Assets system), Call Manager (Telephone system), BACM and other servers with external companies like Old Mutual and Interfile.

Municipal Power Restoration

SITA confirmed 100% power at 13:30. Thus bringing -1 services back online. Confirmation of Mainframe came about at 15:20. Everything was fully functional at 17:30. The information I received from talking to the SITA support was that 1 UPS was down, that is why there was

limited power. Two generators we also faulty, so we were running on one generator and one UPS.

1.2 DHA View

Based on the interviews conducted with various officials both at DHA and at SITA, it would seem that the power failure on the ICT infrastructure was due to the following:

1. The generator did not automatically switch on as it was supposed to, despite the recent urgent power maintenance that was done by SITA a few weeks back.
2. As a result the UPS systems could not power up the equipment beyond 07:00 to allow any data centre operators or building maintenance staff to arrive on time to either shut down the ICT infrastructure or manually power up the generator.

Poor preventative maintenance of data centre facility infrastructure by SITA

Furthermore, this incident brings into question SITA's commitment to regular, scheduled preventative maintenance on its data centre facilities infrastructure (a common audit area by the Auditor General) comprising of air conditioning, UPS, and generator as if such infrastructure was being maintained properly and any findings / recommendations followed through, such an event may have been prevented or at least have its impact reduced to an acceptable minimum.

Lack of monitoring and alerting system

SITA does not appear to have an early warning system installed for monitoring and alerting ,via e-mail and SMS, on any power outage or environmental incidents such as high temperature or high moisture content. Had such a monitoring and alerting system been in place, SITA officials might have been able to respond to this incident within one or two hours well before Government offices open (if 24 hour operations such as Ports of Entry and Foreign Missions are to be ignored). In as much as SITA has a Network Operations Centre that supposedly monitors.

Apparent insufficient power capacity by SITA generator

Municipal power was restored within the Centurion area at 15:00. The fact that Mainframe systems could only be brought back online almost two hours later after SITA had confirmed '100%' power restoration seems to suggest that the generator in question did not have sufficient capacity to power all ICT equipment at SITA Centurion, especially the Mainframe.

1.3 Way forward

Failure to ensure uptime of DHA systems has an adverse impact not only on the Department's reputation, but may also lead to repeat visits by DHA clients thus result in wasted time and money. Unfortunately when services are down, especially due to faults on SITA's environment, SITA management is not confronted by DHA clients, DHA management is. A sustainable solution therefore has to be found in order to ensure continuous power provision to DHA's systems.

The Department is embarking on a programme to create resilient system hosting environments (Tier III data centres) that can remain up even when some components such as air-conditioning, generator or UPS are being maintained.

In a Tier III data centre environment, every major component such as Air Conditioning, Uninterrupted Power Supply (UPS), and Generator are duplicated to allow continuity even when there is failure by one of the components.

The Department is currently finalising the appointment of an Infrastructure Project Management service provider who will design and manage the Construction of Tier III data centres at New Corporation Building (the old BVR) and SITA Centurion. The Department envisages that all hosting of its systems shall be done concurrently at New Corporation Building in Pretoria CBD, and at SITA Centurion to allow high availability and load sharing of client transactions depending on volumes at hand.

Considering the fact that no SITA data centre facility is on Tier III standard, where failure of one facility infrastructure component does not necessarily lead to interruption to an ICT service, the Department will seek, in collaboration with SITA to have the following:

- Migration of SITA Centurion Internet connectivity infrastructure into the new DHA Tier III server accommodation area within SITA Centurion pending the finalisation of SITA's own construction of a Tier III data centre;
- Addition of the New Corporation Building (ex-BVR) Tier III data centre onto SITA's Core Network to enable connectivity redundancy in case of connectivity failure

2 Monday, 13 August 2018 – Loss of Network Connectivity at SITA Centurion

2.1 Background

The SITA's network backbone comprising of links to telecommunications carrier companies had its services interrupted due to faulty carrier network equipment belonging to Broadband Infraco (BBI). The arrival of the BBI technician took longer than 30 minutes to arrive.

The interruption of this connectivity meant that the whole of Government's ICT services hosted at SITA Centurion were not available to neither Government officials nor the public.

However, on arrival the BBI technician took a few minutes to re-activate the equipment.

2.2 DHA View

Over-reliance on a service provider even for mundane tasks such as switching on and off, including troubleshooting or problem diagnosis, led to a network service outage. Had SITA personnel been trained, the service disruption could have been minimised.

2.3 Way Forward

As per section 1.3, the only way for DHA to be to guarantee the uptime / availability of its ICT services has to include the construction of Tier III data centres