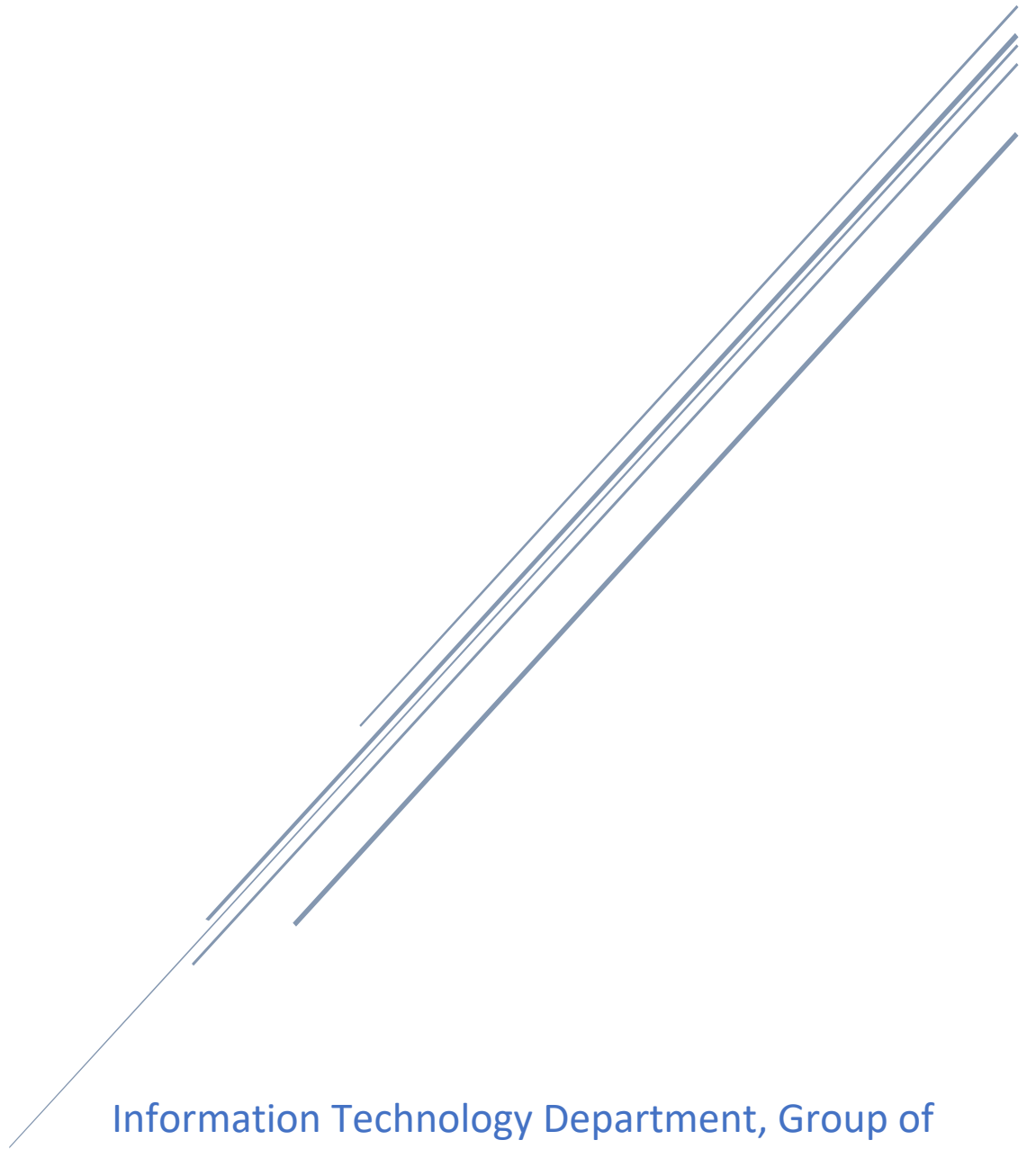


Incident Report for 23 Oct 2023 Core Storage Cluster failure and subsequence issues



Information Technology Department, Group of
Infrastructure and System Management

Related Parties:

1. Name: Ivan Cheung
Role(s): Chief Information and Operation Officer and System in-charge

2. Name: Anson Tsang
Role(s): Chief Technology Officer and Database in-charge

3. Name: Jia Jun
Role(s): System Support

4. Name: Ray Kin
Role(s): Datacenter Support

5. Name: Alistair Lee
Role(s): Chief Executive Officer

6. Name: Dicky Fung
Role(s): Chief Finance Officer

7. Name: Alex Liang
Role(s): Chairman of Emergency Response Group

Related Information:

Incident Location: HN Core Storage Cluster (Core Storage Unit)

Date: 23 Oct 2023 – 28 Oct 2023

Incident Description:

- 23 Oct 2023

At around 16:00, our system and infrastructure support team received some system failure alarms from NMS and SMS. Our system and infrastructure (SI) support team has reached out to the network support team to check the connectivity issue between all systems. From the overlay view, all systems and routing are working as expected.

At around 17:00, SI support accessed the NFVi and found that some storage arrays connected to the SDI via iSCSI were offline and the system was swapped into read-only mode. SI support has escalated to the Chief Information and Operation Officer (COIO) to grant permission for root access and reboot the failure systems.

At around 18:00, the COIO contacted data center (DC) support and checked the status of the storage cluster. DC support reported the storage cluster's network LED is off. After consulting the vendor, they suggest rebooting and collecting the system log.

At around 18:15, DC support tried to fully reboot the storage cluster and found the PDU failed. The whole storage cluster has failed, and all related OSS/BSS and production systems that are stored via iSCSI are disconnected. The COIO is escalated to the CEO and the emergency response group (ERG).

At around 20:00, the COIO confirmed that the PDU of the storage cluster failed, and no instance replacement could be performed. An announcement is published to all users and requests the CFO for emergency funds for PDU replacement.

At around 20:30, ERG declared an L1 emergency, and the CFO approved the fund for the replacement of PDU for the storage cluster.

- 24 Oct 2023 to 27 Oct 2023
Waiting the shipping of the PDU.

- 28 Oct 2023
Replacement is performed and the storage cluster is online. Most system is resumed in-services except for the database cluster. The COIO is contacted database (DB) support to check if the database cluster is up and running. However, DB support found that some misconfiguration within the database cluster caused some unexpected data loss. The DB support has restored the database from backup, but some data is inconsistent.

Incident Causes:

- Failure in storage cluster,
- Misconfiguration in database cluster,
- No DR procedure for database cluster restoration,
- No DR procedure for storage cluster restoration,
- No spare PDU in datacenter

Follow up recommendations:

We have reviewed the whole failure and requested to Accounting department for funds to purchase extra equipment which may fail and cause disaster. Besides, we will further discuss internally those DR procedures in order to prevent such issues from happening again.