SnT 2025 8 SEPTEMBER ONLINE DAY 9 TO 12 SEPTEMBER AT HOFBURG PALACE, VIENNA & ONLINE
CTBT: SCIENCE AND TECHNOLOGY CONFERENCE

P4.3-536

Disaster Recovery in the CTBTO

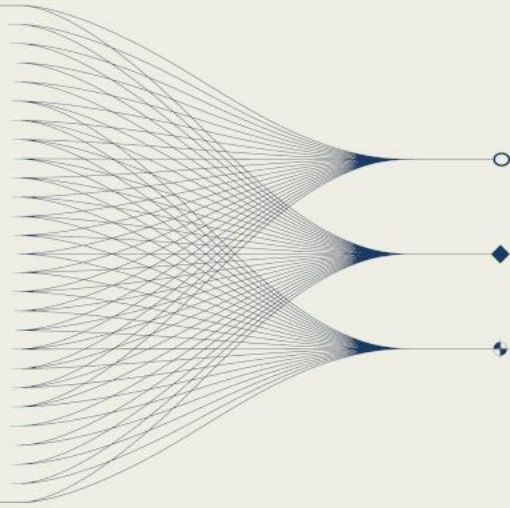
A. Sudakov, G. Graham, J. Pretorius, R. Mfondoum

Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO)

CTBTO PREPARATORY COMMISSION | PUTTING AN END TO NUCLEAR EXPLOSIONS

INTRODUCTION AND MAIN RESULTS

The poster presents an overview of the IDC Disaster Recovery (DR) Pilot 2024, highlighting results, technical achievements, and future plans. It reflects the CTBTO's commitment to operational continuity, resilience.



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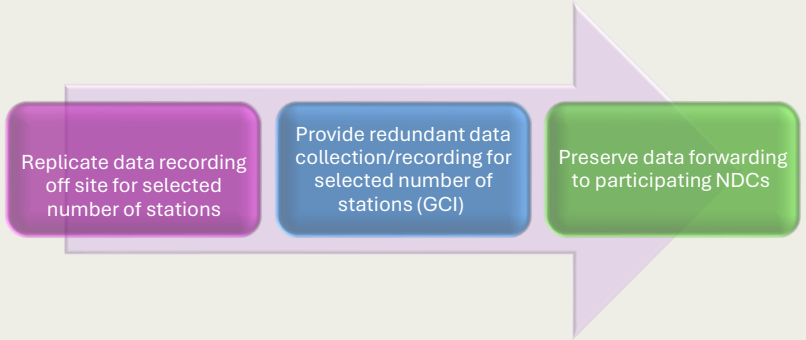
Introduction

The IDC collects, processes and analyses monitoring data and shares IMS data and IDC products with States Signatories. To deliver data and services, the IDC operates a set of computers and associated supporting services in the CTBTO computer centre, which is currently located in the Vienna International Centre (VIC).

If an **unexpected and catastrophic disaster** were to occur, resulting in the total loss of the CTBTO computer centre, the IDC would be unable to meet its operational requirements to provide data and products.

This poster presents a pilot study exploring how the International Data Centre (IDC) could maintain its operational functions in the event of a catastrophic failure of the CTBTO computer centre at the Vienna International Centre (VIC).

To ensure continuity in data acquisition, processing, and dissemination, **the pilot was launched in Q3 2024** to gain practical experience in implementing the IDC Disaster Recovery Plan and to evaluate the feasibility of alternative infrastructure solutions.



Results Overview

DR PILOT - Timeframe

- Sep - Dec 2024

Participation

Participation Requests (via NV):
- **20 countries**, involving **40 participants**
- **Active NDC Participants** (7 countries): Australia, China, Norway, Thailand, Türkiye, Ukraine, United Kingdom

Communication and Engagement

Email Exchange:
- **188 emails received** (information requests, reporting results)
- **57 emails sent** (clarifications, guidance)

NDC Forum Activity:
- 27 communications posted
- 375 views recorded

IMS Site Selection and Connectivity

- **24 IMS sites** were selected for data recovery (DR) setup
- **22 sites (including 2 NDCs)** successfully established DR connectivity via VSAT, VPN, 3G/4G
- **2 sites** (FURI, I18DK) could not establish GCI routing
- **IMS sites with BGAN or dual MPLS links** were unable to connect due to missing MPLS support at ALT (DR)

IMS Stations Data Transmission Status

- **14 stations** successfully transmitted data to ALT (DR)
- **5 stations** had no data transmission established: I47ZA, NNA, AAK, I20EC, KURK
- **1 station** (KMBO) was down during the reporting period

National Data Centres (NDC)

- **Stations Provided:** 206 stations made available to NDCs
- **Stations with Data Forwarded:** Data from 160 stations was forwarded upon request
- **Data Volume:** 840 GB of data forwarded
- **Time Span:** Covers 95 data days
- **Reporting to IDC:**
  - ~2000 daily reports generated/shared (based on cdqual)
  - Reports include: Station, Channel, Outage reports
  - **123 stations** included in reporting
  - **70 days** covered in statistical summaries

International Data Centre (IDC)/ALT(DR)

- **Connectivity:** High-speed internet link enabled VPN & 3G sites to connect via IPsec
- **Stations Sent to ALT (DR):** 14 stations (data streams via CD1.1)
- **Data Received by ALT (DR):**
  - **Total Volume:** 74 GB
  - **Time Span:** 77 data days

Recommendations

Site Selection and Infrastructure

- Decide on the physical location of the Disaster Recovery (DR) site, ensuring alignment with operational, security, and connectivity requirements.
- Install a secondary terrestrial circuit between the Vienna International Centre (VIC) and the DR site to enhance data backup throughput and resilience.

Scope and Design

- Define a broader scope for DR, encompassing not only data recovery but also operational continuity, infrastructure resilience.
- Include DR site considerations in the upcoming GCI IV Terms of Reference, enabling future contractors to incorporate DR design elements.

Staffing and Support

- Dedicate (recruit) IT personnel to provide permanent technical support and operational oversight at the DR site.

Implementation Approach

- Adopt a phased implementation strategy, including:
  - Scoping: Assess needs, risks, and dependencies.
  - Design: Develop architecture, protocols, and integration plans.
  - Pre-Implementation: Prepare the site, procure equipment (or services), and establish connectivity.
  - Implementation: Deploy systems, test functionality, and validate operational readiness.

Monitoring and Operational Assurance

- Enable SOH-type monitoring (State-of-Health) at the DR site to ensure real-time visibility into system performance, outages, and data integrity.

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