

CASE STUDY

Sustainable Water Solutions Organization leverages Perpetuuiti to make informed decisions in the case of any disaster

About the Client

The client organization (formerly known by another name and now part of a larger group) is the primary entity responsible for the collection, treatment, and reuse of wastewater throughout the Emirate of Abu Dhabi. Established to promote a circular water economy, the company plays a vital role in water security by transforming wastewater into a valuable, sustainable resource, processing over 1.3 million cubic meters daily through a 13,000 km network of sewers and over 40 treatment plants.

Aligned with the UAE Net Zero 2050 strategic initiative, the Abu Dhabi Economic Vision 2030, and UN Sustainable Development Goal 6 (Clean Water and Sanitation), the organization focuses on reducing reliance on fresh water through the reuse of treated sewage effluent for irrigation and industrial purposes.

As a subsidiary of a larger holding group, the organization acts as a low-carbon water champion, utilizing innovative, sustainable, and smart technologies to enhance the water-food-energy nexus.

Their Challenges

Manual Disaster Recovery (DR) Drill Activities

The client had to manually perform several tasks related to disaster recovery drills, which were time-consuming and prone to errors. Key activities included:

Switchover (Planned DR)

This is a controlled process that involves transferring the production environment to the disaster recovery site. It is typically done during a DR drill or when significant work, such as major upgrades, is being carried out at the production data center. This process may involve planned downtime, allowing the client to continue operations from the DR site while data is replicated back to the primary site.

Switchback (Planned Fallback)

This planned activity allows the client to revert operations from the disaster recovery site back to the primary/production site once the DR drill or other maintenance tasks are completed.

Failover (Unplanned DR)

This unplanned activity occurs suddenly in response to a disaster, with the aim of shifting operations to the DR site to ensure business continuity.

Complexity of Manual Processes

The manual nature of these disaster recovery (DR) activities involved a series of intricate steps, each requiring specific checks and validations. These checks ensured that all components were functioning correctly and that there were no outstanding issues. Due to these complexities, the time required to complete DR drills was substantially longer.

Dependency Challenges

The manual execution of DR drill activities created a dense web of dependencies among stakeholders, requiring coordinated efforts to ensure success. This interconnectedness slowed down operations and hindered efficiency.

Visibility Concerns

In a large-scale infrastructure, it is crucial to maintain clear visibility for effective coordination during DR processes. Manual processes complicated this by requiring different stakeholders to execute tasks independently.



Challenges with SO/SB/FO Processes

The manual approach to the Switchover, Switchback, and Failover (SO/SB/FO) processes increased the risk of errors and contributed to longer Recovery Time Objectives (RTOs).

Lack of Real-Time Visibility

The absence of real-time visibility into RPOs and RTOs across the entire IT environment created uncertainty from a DR perspective and affected monitoring of business service availability.

Dependency on SME Coordination

The success of DR drills relied heavily on the coordination and availability of Subject Matter Experts (SMEs), especially during off-peak hours.

Absence of Automation

The lack of automation necessitated significant manual effort, leading to inconsistencies and a higher chance of human error.

Limited Impact Analysis

The inability to conduct real-time impact analysis resulted in longer Mean Time to Recovery (MTR).

Inability to Perform Parallel DR Recoveries

The manual approach lacked the ability to incorporate parallelism in DR drill procedures.

Human Intervention in Conducting Recovery Drills

The dependence on stakeholder availability introduced significant human intervention, slowing down the process.

Problem Statement

The client organization, with a large IT infrastructure, needed an automated solution to manage disaster recovery (DR) for various business-critical applications.

The existing DR processes were entirely manual, requiring extensive coordination among IT teams and application stakeholders to execute both planned and unplanned DR drills. This created challenges such as slow response times, increased risk of human error, and dependency on key personnel.

DR drills were conducted manually, with RTO and RPO determined through discussions with stakeholders rather than real-time system insights.

The client needed a solution that would automate these processes, reduce manual intervention, improve monitoring and visibility, and enable efficient DR execution at any time.

Our Solution

Perpetuuti deployed Continuity PatrolTM to implement IT DR automation.

Centralized Monitoring and Dashboard

By configuring all in-scope applications within Continuity PatrolTM, our client gained the ability to monitor all infrastructure components from a single, centralized dashboard. This included components from both the Primary Data Center (DC) and Disaster Recovery (DR) sites across multiple operating systems (Linux, Solaris, Windows), Oracle database instances, application services, and more.

Continuous System Integrity Monitoring

Continuity PatrolTM continuously monitors infrastructure components at both the Primary and DR sites to ensure system integrity from a DR automation perspective. This included real-time checks for server availability, database status, and business service performance.

Real-Time Visibility into DR Readiness

Continuity PatrolTM offered real-time visibility into the DR readiness, and respective Recovery Point Objectives (RPOs) and Recovery Time Objectives (RTOs) for all configured business

services, with automated notifications via email/SMS when deviations occurred. This proactive alert system kept stakeholders informed and enabled prompt response.

One-Click DR Automation

The PSE could now automate the entire Disaster Recovery process with a single click, leveraging Continuity Patrol's advanced monitoring capabilities. The solution provided both a Business View for high-level insights via the CxO Dashboard and a detailed IT View for granular information via the IT View dashboard.

Custom Workflow Automation

Continuity PatrolTM enabled the client organization to create custom workflows that automated various tasks, including pre-flight/post-flight checks, application services, database services, and network-related activities (like DNS modifications). This comprehensive automation reduced the need for manual intervention and minimized the risk of human error during DR processes.

Reduced Recovery Time Objectives (RTOs)

With the capability for parallel workflow execution, the client significantly reduced RTOs, allowing faster and more efficient recovery operations.

Effective Management of Application Interdependencies

By configuring application interdependencies within workflows, our client managed dependencies during the recovery process, leading to a smoother overall recovery experience.

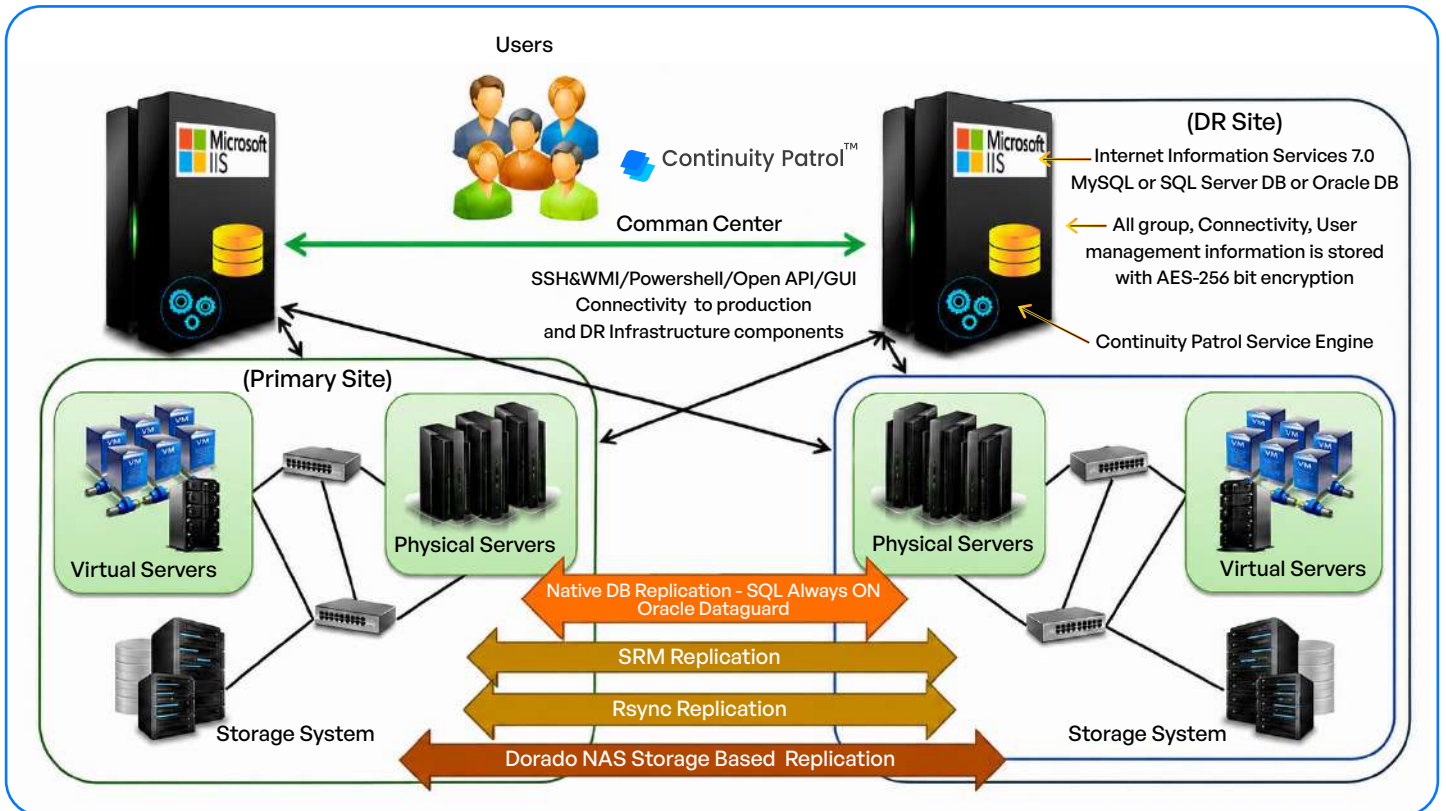
Runbook Development through ITDR Consultancy

Our ITDR consultancy included developing runbooks for each of the business applications in scope, providing the client with a clear and structured approach to DR drills and recovery processes.

Solution Diagram

Continuity PatrolTM has been strategically deployed to ensure optimal disaster recovery (DR) readiness and resilience for the client organization. The system is hosted as an active instance within the DR datacenter, providing continuous monitoring and automation capabilities for disaster recovery activities. This primary setup ensures that critical DR processes are managed and controlled from the designated recovery site.

Additionally, an inactive instance of Continuity PatrolTM is maintained at the Primary datacenter.



Technology Landscape

- 7 Business Applications
- 20 Databases (Oracle, MS SQL)
- 60 App/Web VMs/Servers (Including management consoles)
- Oracle Dataguard, MS SQL AlwaysOn
- VMWare Integration
- SRM, rsync, Dorado NAS Storage replication

Results And Benefits To Business

Automation of Manual Procedures

The manual procedures for 7 in-scope applications have been successfully automated. This shift from manual to automated processes has reduced the time and effort required to execute disaster recovery (DR) activities, while also minimizing the risk of human error.

Development of Runbooks

Comprehensive runbooks have been prepared for each application, providing detailed guidance on DR procedures. These runbooks ensure that all stakeholders have clear instructions on the steps to take during switchover, switchback, and failover events.

Successful Switchover, Switchback, and Failover

The switchover, switchback, and failover processes for all in-scope applications have been completed successfully. This achievement demonstrates the effectiveness of the automated workflows in managing planned and unplanned DR activities.

Creation of Automated Workflows

Switchover, switchback, and failover workflows were designed and implemented to ensure smooth transitions during DR drills or actual events. The workflows cover a comprehensive range of activities, including pre-flight and post-flight checks, ensuring seamless operation with minimal human intervention.

MS SQL Workflow Configuration and Execution

Continuity Patrol™ successfully configured automated workflows for switchover, switchback, and failover for Microsoft SQL Server databases. The workflows were designed to handle various DR scenarios efficiently, ensuring a smooth transition between the primary and disaster recovery sites. These workflows were tested, and successful switchover and switchback operations were carried out, demonstrating the system's reliability and effectiveness.

Oracle Workflow Configuration and Execution

Similarly, automated workflows for switchover, switchback, and failover were configured for Oracle databases. These workflows address the unique requirements of Oracle environments, providing a seamless and efficient transition process during DR drills or actual recovery scenarios. The successful execution of switchover and switch back operations for Oracle databases underscores the robustness and flexibility of Continuity PatrolTM in managing a variety of database environments.

MS Exchange Workflow Configuration and Execution

Successfully configured workflows for switchover, switchback, and failover for Microsoft Exchange databases. This automation capability ensured seamless transition and recovery during DR drills or real-life failover situations. The workflows were designed to minimize downtime and maintain the integrity of Exchange-related services, contributing to smoother communication continuity.

Application Services Workflow Configuration and Execution

Automated workflows for switchover, switchback, and failover were also configured for the application services within the scope of this project. This included various business-critical applications that required reliable disaster recovery operations. The successful execution of these workflows for both switchover and switchback demonstrated the robustness and adaptability of the solution in handling complex application environments.

Monitoring of Application and Database Services

Continuity PatrolTM provided comprehensive monitoring capabilities for application and database services. This constant surveillance ensured early detection of issues and allowed for proactive measures to maintain service continuity. The monitoring tools enabled the client to keep track of the health and performance of key services, thus contributing to the overall reliability and efficiency of the disaster recovery process.

Integration with Hypervisor Platforms

Continuity PatrolTM has been integrated with leading hypervisor platforms, including VMware and vSphere, allowing the client to manage virtualized environments effectively.

Replication Solutions Monitoring

The platform provides real-time monitoring of data replication, ensuring consistent data synchronization between primary and disaster recovery sites.

Reduced SME Dependency

With automated workflows for Switchover, Switchback, and Failover (SO/SB/FO) drills, the need for SMEs to be physically present during DR operations is significantly reduced.

Automated SO/SB/FO Drills

Continuity PatrolTM has automated the SO/SB/FO processes, requiring minimal human intervention. This automation not only reduces the likelihood of human error but also speeds up the execution of DR drills, ensuring a more rapid and reliable response during planned and unplanned events.

Unified Dashboard for Real-Time Monitoring

The platform provides a unified dashboard that gives the client instant visibility into the entire IT environment. This dashboard displays business service availability and real-time metrics for Recovery Point Objectives (RPOs) and Recovery Time Objectives (RTOs). With this centralized view, stakeholders can monitor the status of disaster recovery operations and quickly respond to any issues that arise.

Streamlined Resource Coordination

Continuity PatrolTM reduces manual effort by automating resource coordination during disaster recovery (DR) operations. Alerts, information, and updates are automatically sent to stakeholders, ensuring a smooth and efficient recovery process.

Optimized Recovery Time Objectives (RTO)

Automated and parallel execution of DR drills, with the flexibility to add logical constraints, enables optimized RTO. The orchestration of DR procedures is more efficient, reducing recovery times.

Business Service Continuity and Availability Management

Continuity PatrolTM automates key aspects of business service continuity, ensuring consistent service availability during DR drills and recovery operations.

Unique Features for DR Automation

The platform offers several unique features to enhance DR automation:

- Pre-flight/Sanity Checks: Ensures that all systems are prepared for DR operations.
- DNS/NAT Automation: Streamlines network-related changes during recovery.

- Password Change Management: Automates security updates and password rotations.
- Out-of-the-Box and Custom Reports: Provides ISO-compliant reports and the capability to generate custom reports, useful for audits and compliance checks.

1-CLICK RECOVERY
INVOCATION

**UPTO
80%** REDUCTION
IN RTO

50% REDUCTION IN
OPERATIONAL COSTS



READY FOR YOUR OWN SUCCESS STORY?

Get in touch with our automation experts and learn how you can fast-track your digital transformation initiatives.

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About Perpetuuiti

Perpetuuiti empowers people and businesses alike. We deliver the world's most-comprehensive and urbane automation platforms making work more human. Our platforms deliver leading-edge automation solutions for modernizing resiliency management, and turbocharging the performance of your applications, IT and business operations at speed and scale to drive exponential efficiencies.

For more information, visit www.ptechnosoft.com