DR Project - Weekly Update Document

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Project: Disaster Recovery (DR) Implementation and Enhancement

# 1. PMTA Alternative for DR Cloud Setup

Objective:

* Evaluate and implement a cloud-based mail transfer solution to replace or supplement PMTA for the DR environment.

Current Status:

• Research and planning initiated to identify a suitable PMTA alternative.  
• KumoMTA has been shortlisted as a potential candidate and is currently under detailed evaluation.

Key Evaluation Areas:

* Configuration Flexibility: KumoMTA provides configuration through declarative JSON-based files. It supports modern deployment strategies via containers (Docker/Kubernetes), which simplifies integration with cloud infrastructure.
* Capacity & Performance: KumoMTA is designed to handle large volumes of transactional and bulk emails with optimized queue and delivery management. Initial reports suggest high throughput comparable to PMTA, with scalability advantages in the cloud.

1. Advantages:

* Open-source and community-driven development.
* Native support for cloud environments and microservice architecture.
* Easier automation and deployment compared to legacy MTAs.
* Built-in monitoring and stats via Prometheus/Grafana integration.

1. Disadvantages:

* Relatively newer in market; smaller support community.
* Limited vendor-based commercial support.
* Requires hands-on expertise for advanced configuration.

Next Steps:

• Deep-dive on configuration specifics.  
• Load/capacity testing in test environment.  
• Documenting comparison with PMTA.  
• Prepare demo deployment POC in DR cloud VNet.

# 2. Creation of Child Domain Controller in DR VNet

Objective:

* Ensure availability and continuity of identity services in the DR setup by creating a synced Domain Controller.

Current Status:

• Research phase completed on AD architecture and replication models.  
• Planning and preparation underway to create a Child Domain Controller in the Azure-based DR VNet.  
• This child DC will sync with the Primary On-Premise Master DC using Active Directory Sites and Services with secured IPsec VPN tunnel or Azure AD Connect (based on final approach).

Implementation Considerations:

• Network and site replication configuration must respect DR network isolation and performance needs.  
• Sync must be tested for both DNS and AD objects under latency conditions.  
• Failover readiness and promotion/demotion strategies to be defined.

Progress Update:

• Hands-on training on creating and configuring a standard DC has started.  
• Awaiting approval to initiate actual setup in DR.  
• Upon approval, POC will be executed with a secure join to existing AD forest.

# 3. ETL-Based Cross-VM Data Synchronization POC

Objective:

* Design and implement a scalable, automated, and database-agnostic ETL-based solution to sync structured data across three Linux VMs in Azure. Supports PostgreSQL and future flexibility for other databases.

Architecture Summary:

• DB1 (Primary Server): Stores main data, retains full 30-day historical data.  
• DB2 (Secondary Server): Receives and maintains the latest 7-day data from DB1.  
• DB3 (Backup/Sync Server): Restores DB1 backup and dynamically syncs 7-day data regularly.

Current Activities:

• Finalized high-level architecture for the pipeline.  
• Working on a universal ETL framework using Python and shell scripts (compatible with PostgreSQL and extensible for MySQL, MariaDB, etc.).  
• Designed initial parameterized script for metadata-driven syncing.  
• Storage and networking requirements scoped for DR environment.

Next Steps:

• Deploy first working version of ETL pipeline for PostgreSQL.  
• Validate 7-day and full backup restore flow.  
• Integrate with alerting/monitoring.  
• Document scaling strategies and limitations.

# 📝 Summary

Significant progress has been made in research and planning across all three key DR project areas. The team is now moving towards POC and testing phases in the coming weeks, post-approvals.