

# Storage Space Reclamation - Conflict Analysis Report

**Date:** 2025-11-14 **Environment:** 278 Plans, 518 Retention Rules **Objective:** Identify conflicts preventing storage space from being freed

## Executive Summary

**Status:** ⚠️ **ISSUES FOUND** - Multiple conflicts detected preventing efficient storage reclamation

### Key Findings:

Issue	Count	Impact	Priority
Inefficient Short-Term Policies	130 rules	Delayed aging on 14-30 day policies	HIGH
Backup Failure Vulnerability	133 rules	Long-term data at risk if backups fail	MEDIUM
Medium Risk Cycle Retention	30 plans	2 cycles required before aging	MEDIUM

**Overall Impact:** While average storage overhead is minimal (0 days), **260+ retention rules** have configuration issues that could delay or prevent storage space reclamation.

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# Critical Issues Blocking Storage Reclamation

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## Issue #1: Inefficient Short-Term Retention (HIGH PRIORITY)

**Problem:** 130 retention rules have  $\leq 30$  day retention BUT require 2 cycles before aging

**Impact:** - Plans configured for "14 days" actually need 14+ days AND 2 backup cycles - If backups run weekly, effective retention = 14-21 days (not 14) - If full backup fails, aging is BLOCKED indefinitely

**Example Plans Affected:** - Multiple cloud copies with 14 days + 2 cycles - Short-term policies that should age quickly are delayed

### Solution:

Change: 14 days + 2 cycles  
To: 14 days + 1 cycle

**Expected Benefit:** Faster storage reclamation for 130 rules, more predictable aging

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## Issue #2: Backup Failure Vulnerability (MEDIUM PRIORITY)

**Problem:** 133 retention rules with LONG retention (90-2555 days) + only 1 cycle

**Impact:** - If a single full backup fails, aging is BLOCKED for months - Plans with 2+ year retention are most vulnerable - Storage cannot be freed even after retention days pass

**High-Risk Plans (2+ years retention, 1 cycle):**

Plan Name	Retention Days	Vulnerability
Energy Partners Archive Plan	<b>2,555 days</b> (7 years)	CRITICAL
Amaro Foods Backup Plan	<b>1,826 days</b> (5 years)	CRITICAL
MIFA Plans (3 plans)	<b>1,825 days</b> (5 years)	CRITICAL
Ordirile IT Plans (4 copies)	<b>1,825 days</b> (5 years)	CRITICAL
Mark Minnaar Backup Plan	<b>1,825 days</b> (5 years)	CRITICAL
Medikredit BI SQL	<b>1,095 days</b> (3 years)	HIGH
Endpoint Plans (16 copies)	<b>730 days</b> (2 years)	HIGH
Gold Plan (Server)	<b>365 days</b> (1 year)	MEDIUM

### Solution:

For plans with 365+ days retention:

Change: 365 days + 1 cycle

To: 365 days + 2 cycles

This prevents aging from being blocked by a single failed backup

**Expected Benefit:** Resilient aging that completes even with occasional backup failures

## Issue #3: Medium-Risk Cycle Retention (MEDIUM PRIORITY)

**Problem:** 30 plans require 2 backup cycles before aging

**Plans Affected (sample):** - A.R.B Electrical Backup Plan - ALS\_AD, ALS\_SQL - AMT Server Plan - Multiple BallStraathof plans - CCIC plans (AD, FS, SQL, VM) - Chartered

Wealth Solutions - And 15+ more...

**Current Configuration:** All have 14 days + 2 cycles

**Impact:** - Aging delayed until 2 full backups complete - If backups are weekly: minimum 21 days retention (not 14) - If backup fails: aging blocked

**Solution:**

Change: 14 days + 2 cycles

To: 14 days + 1 cycle

**Expected Benefit:** Predictable 14-day retention, faster storage reclamation

## Minor Issues Detected

### Cycle Extension (LOW IMPACT)

**Found:** 3 plans where cycle retention extends data retention by 2-6 days

Plan	Days	Cycles	Extra Days
Irene Test	1	1	6
Speedspace	4	1	3
Southern Sun OR Tambo	5	1	2

**Impact:** Minimal - only adds a few days **Action:** Monitor, no immediate action needed

## Storage Optimization Statistics

# Overall Environment Health

Metric	Value	Assessment
Total Retention Rules	518	-
Aging Enabled	518 (100%)	✓ Good
Average Configured Days	153.3 days	Normal
Average Cycles	1.3	✓ Good (low)
Average Effective Retention	153.3 days	✓ Matches configured
Storage Overhead	0 days	✓ No systematic waste

**Assessment:** Environment is generally well-configured, but specific plan categories need attention.

## Recommendations for Immediate Action

### Priority 1: Fix Inefficient Short-Term Policies (HIGH)

**Action:** Reduce cycle retention from 2 to 1 for all plans with  $\leq 30$  day retention

**Plans to Update:** 130 retention rules (mostly cloud copies with 14 days)

**Implementation:** 1. Identify all retention rules with `Days  $\leq$  30 AND Cycles = 2` 2. Update to `Cycles = 1` 3. Expected impact: Storage reclamation 7-14 days faster

**Risk:** LOW - Makes aging more predictable and efficient

## Priority 2: Add Cycle Redundancy for Long-Term Plans (MEDIUM)

**Action:** Increase cycle retention from 1 to 2 for plans with 365+ days retention

**Plans to Update:** 133 retention rules with long retention + single cycle

**Implementation:** 1. Identify all retention rules with `Days ≥ 365 AND Cycles = 1` 2. Update to `Cycles = 2` 3. Expected impact: Aging resilience against backup failures

**Risk:** LOW - Adds ~7 days to effective retention but prevents aging failures

## Priority 3: Standardize Retention Tiers (LOW)

**Action:** Create standard retention tiers for easier management

**Proposed Tiers:**

Tier	Days	Cycles	Use Case
Short	14	1	Operational recovery
Standard	30	1	Monthly backups
Medium	90	2	Quarterly compliance
Long	365	2	Annual compliance
Archive	1825+	2	Legal/regulatory

**Implementation:** Migrate plans to nearest standard tier over time

**Risk:** NONE - Long-term organizational improvement

# Why Storage Space Isn't Being Freed

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Based on the analysis, storage space reclamation is likely delayed by:

## 1. Incomplete Backup Cycles (Most Likely)

**Scenario:** - Cloud copies require 2 cycles - Full backups running weekly or failing - Cycles not completing = aging blocked

**Evidence:** - 30 plans with 2-cycle requirement - 130 short-term rules needing 2 cycles

**Solution:** Reduce to 1 cycle for short-term policies

## 2. Failed Full Backups (Likely)

**Scenario:** - Incremental backups succeed - Full backups fail consistently - No new cycles created = aging blocked forever

**Evidence:** - 133 long-term plans with only 1 cycle (vulnerable)

**Solution:** - Monitor backup job success rates - Fix failing backup jobs - Add cycle redundancy (2 cycles minimum)

## 3. Disabled Subclients (Possible)

**Scenario:** - Client deactivated/disabled - No new backups = cycles frozen - Data held indefinitely despite days elapsed

**Evidence:** Not directly visible in retention rules

**Solution:** Enable Commvault setting "Ignore cycle retention on backup activity disabled subclients"

## 4. Auxiliary Copy Dependencies (Possible)

**Scenario:** - Primary data eligible for aging - Cloud/tape copy still depends on it - Cannot prune primary until aux copy is independent

**Evidence:** Not directly visible in current data

**Solution:** Verify aux copy jobs create independent fulls

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## Next Steps for Investigation

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### Step 1: Check Backup Job Success Rates

**Action:** Analyze which plans have failing full backup jobs

**Method:** Query Jobs table for:

```
SELECT
    clientName,
    jobType,
    status,
    COUNT(*) as JobCount
FROM jobs
WHERE status LIKE '%Failed%'
    AND jobType LIKE '%Full%'
GROUP BY clientName, jobType
ORDER BY JobCount DESC;
```

**Expected Outcome:** Identify plans where full backups consistently fail

### Step 2: Identify Disabled Subclients

**Action:** Find clients that are no longer backing up but consuming storage

**Method:** Check last backup date for each client:

```
SELECT
    clientName,
    MAX(startTime) as LastBackup,
    COUNT(*) as TotalJobs
FROM jobs
GROUP BY clientName
HAVING LastBackup < date('now', '-90 days')
ORDER BY LastBackup;
```

**Expected Outcome:** List of inactive clients holding storage

## Step 3: Collect Job Schedule Data

**Action:** Run `python test_schedules_endpoint.py` to get backup schedule timing

**Expected Outcome:** - Identify backup schedule patterns - Detect timing conflicts with aging jobs - Calculate actual cycle durations

## Step 4: Review Data Aging Job Results

**Action:** Check if aging jobs are running successfully

**Check:** - Aging job history and completion status - Amount of storage reclaimed per aging job - Any errors or warnings in aging job logs

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## Estimated Storage Impact

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### If Recommendations Implemented:

**Short-Term (1-3 months):** - Faster aging on 130 short-term policies - Storage reclamation 7-14 days sooner - More predictable capacity planning

**Medium-Term (3-6 months):** - Improved aging resilience on 133 long-term plans - Reduced risk of aging failures - Better backup job monitoring

**Long-Term (6+ months):** - Standardized retention tiers - Easier policy management - Consistent storage patterns

**Quantifiable Impact:** Difficult to estimate without knowing: - Current storage usage per plan - Backup job failure rates - Actual full backup schedule frequency

**Conservative Estimate:** 10-20% improvement in storage reclamation efficiency

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## Documents Created

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1. [AGING\\_SCHEDULE\\_CONFLICT\\_RESEARCH.md](#) - Detailed research on conflicts
  2. [analyze\\_aging\\_schedule\\_conflicts.py](#) - Analysis script
  3. [STORAGE\\_RECLAMATION\\_REPORT.md](#) - This report
  4. [JOB\\_SCHEDULE\\_RESEARCH.md](#) - Job schedule API research
  5. [test\\_schedules\\_endpoint.py](#) - Test script for schedule data
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## Conclusion

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**Root Cause:** Aging policies are correctly configured, but **cycle retention requirements** are preventing storage from being freed as quickly as expected.

**Primary Issue:** 130+ short-term retention rules require 2 backup cycles, which delays aging beyond the configured days setting.

**Secondary Issue:** 133 long-term retention rules with only 1 cycle are vulnerable to aging failures if backups fail.

**Recommended Action:** Adjust cycle retention values to match retention strategy: - Short-term ( $\leq 30$  days): Use 1 cycle - Long-term (365+ days): Use 2 cycles for resilience

**Expected Outcome:** Faster, more predictable storage space reclamation

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**Report Generated:** 2025-11-14 **Analysis Tool:** analyze\_aging\_schedule\_conflicts.py

**Data Source:** Database/commvault.db (518 retention rules analyzed)