

Change Summary: dbFLEX Link Tracking Implementation

Change ID: CS-2025-01-05-001

Date: January 5, 2025

Feature: dbFLEX Link Access Tracking

Classification: Enhancement

Risk Level: Low

Security Impact: Minimal

Executive Summary

Implemented link access tracking for Salty URLs generated by dbFLEX database system. When users access links containing an ID parameter, Salty now automatically notifies dbFLEX with access timestamp and metadata. Implementation required a Cloudflare Worker proxy to overcome Deno's SSL strictness with dbFLEX's IIS server.

Business Justification

- **Problem:** Organizations had no visibility when encrypted links were accessed
- **Impact:** Compliance requirements mandate access logging for sensitive data
- **Solution:** Automatic tracking without user friction

Technical Implementation

Architecture Overview

Browser → Salty Server → Cloudflare Worker → dbFLEX API

Components Modified

1. **Server-Side** (`server.ts`)
 - Added `/api/track-access` endpoint
 - ID validation (YYYYMMDD-NNN format)
 - Environment configuration for dbFLEX
 - Proxy mode detection
2. **Client-Side** (`templates/index.vto`)
 - JavaScript to detect `?id=` parameter
 - Automatic beacon on page load
 - URL parameter preservation
3. **Infrastructure** (Cloudflare Worker)
 - SSL/TLS compatibility layer
 - Shared secret authentication
 - Request forwarding to dbFLEX

Security Measures

- ☐ Input validation for ID format
- ☐ Rate limiting on tracking endpoint

- ☐ Shared secret authentication for proxy
- ☐ No sensitive data logged
- ☐ Fail-safe design (tracking failures don't affect core functionality)
- ☐ API key stored in Cloudflare, not Salty

Configuration

Environment Variables Added

```
# Salty (Deno Deploy)
DBFLEX_TRACKING_ENABLED=true
DBFLEX_BASE_URL=https://salty-dbflex-proxy-*.workers.dev
DBFLEX_PROXY_SECRET=[REDACTED]

# Cloudflare Worker
DBFLEX_URL=https://pro.dbflex.net/secure/api/v2/15331/PS%20Secure%20Share/update.json
DBFLEX_API_KEY=[REDACTED]
PROXY_SECRET=[REDACTED]
```

Data Flow

1. User clicks: <https://salty.esolia.pro/?id=20250623-003>
2. Client detects ID and sends POST to `/api/track-access`
3. Server validates and forwards to Cloudflare Worker
4. Worker authenticates and forwards to dbFLEX
5. dbFLEX updates record with:
 - Last Accessed: ISO timestamp
 - Last User Agent: Raw browser string
 - Last User-Agent: Parsed format
 - Last Referrer: Source URL

Testing Results

- ☐ ID validation working correctly
- ☐ Tracking succeeds with test ID SALTY-20250623-003
- ☐ dbFLEX record updates confirmed
- ☐ No impact on non-tracked URLs
- ☐ Graceful failure handling verified

Known Issues & Limitations

1. **SSL Compatibility:** Direct connection to dbFLEX not possible due to Deno's strict TLS requirements
2. **Proxy Dependency:** Relies on Cloudflare Worker availability
3. **Single Region:** Worker runs in single Cloudflare region (latency considerations)

Compliance & Audit Trail

Code Changes

- Commits: 8 commits from initial implementation to final working version
- Review: Self-reviewed with AI assistance
- Testing: Manual testing with production data

Documentation Created

1. Feature pitch document
2. Cycle planning document
3. Technical execution plan
4. Integration guide
5. SSL workaround documentation
6. This change summary

Security Review

- No new attack vectors introduced
- API keys properly secured
- Input validation comprehensive
- Logging excludes sensitive data

Rollback Plan

If issues arise:

1. Set DBFLEX_TRACKING_ENABLED=false in Deno Deploy
2. Feature automatically disables
3. No code changes required
4. Remove Cloudflare Worker if permanent rollback

Future Considerations

1. **Batch Updates:** Queue tracking events for efficiency
2. **Analytics Dashboard:** Aggregate tracking data
3. **Direct Connection:** Revisit when dbFLEX updates TLS configuration
4. **Extended Metadata:** Capture additional context (device type, location)

Approval Sign-off

Role	Name	Date	Status
Developer	[Your Name]	2025-01-05	<input type="checkbox"/>
Security Review	Pending	-	<input type="checkbox"/>
Business Owner	Pending	-	<input type="checkbox"/>

References

- GitHub Repository: <https://github.com/eSolia/salty.esolia.pro>
 - Cloudflare Worker: salty-dbflex-proxy-20250705
 - Test Record: SALTY-20250623-003
 - Related Issues: None
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Document Classification: Internal Use Only

Retention Period: 7 years per ISO 27001 requirements