



CU*ANSWERS Management Services

Abnormal Activity Monitoring – Transaction Pattern Change Management

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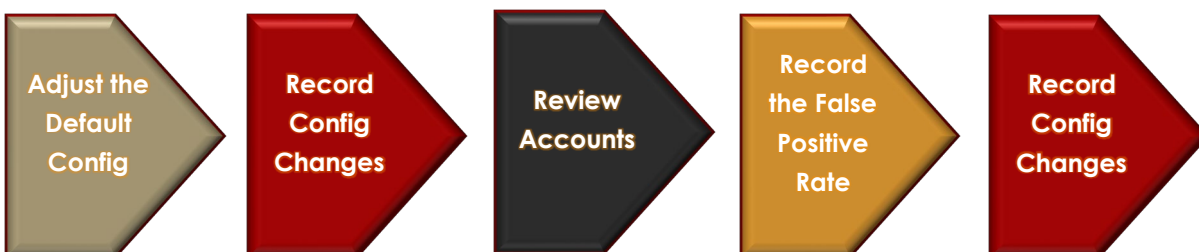
Purpose

The Transaction Pattern option within the Abnormal Activity Monitoring CU*BASE tool was developed to arm credit unions with a means to identify anomalous account activity daily. This booklet describes the change management and data governance methodology developed by AuditLink for use by our credit union partners.

A well-tuned configuration is vital for achieving an efficient and effective abnormal activity identification and review process for credit unions. It is also imperative to have a method for ensuring the integrity of the data being reviewed; something to record the before-and-after of what a configuration was prior to it being changed.

When adjusting, an important question to keep in mind is: "By changing this pattern, will high-risk accounts that were previously flagged no longer be identified?"

The booklet covers the following process.



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Adjusting the Default Configurations

Tailoring the Configuration to Fit Your Credit Union

Every credit union has a different membership composition, risk profile, and complexity level.

The first step is to adjust the default pattern configurations to better align with the transaction behavior of members specific to your credit union.

Determine a Starting Point

Determine a starting point for adjusting each of the 30 patterns by using **Tool #775 – Sample Transactions by Delivery Channel**. This will assist you in establishing average activity levels to work from.

Sample Transactions by Delivery Channel (Tool #775)

The screenshot shows the 'Member Analysis - Transaction Activity' tool interface. The title bar indicates 'Session 0 - BEDROCK COMMUNITY CREDIT UNION'. The main header is 'Member Analysis - Transaction Activity' with a date filter set to 'May 2021'. Below the header, there are filters for 'Month/year' (May 2021), 'Filter' (All, Individual, Organization), and 'Branch ID' (00 ALL Branches). A list of 20 analysis methods is displayed, each with a 'Go!' button and a description. The methods are: Teller Processing, Loan Department Processing, Share Draft Processing, ATM/Debit (PIN) Processing, Online Banking/Audio Response, Online Credit Card Processing, Debit (Signature) Processing, ACH Processing, Phone Operator Processing, Bill Payment Processing-Batch, Certificate Processing, Direct Mail Posting, Member Adjustment Processing, Member Transfers, Payroll Processing, Wire Transfer Processing, Stop Payment Fee Processing, and Automatic System Processing. At the bottom of the list are up and down arrow icons. The footer contains navigation icons and a timestamp 'TR (4538) 6/17/21'.

Analysis Method
Go! Teller Processing
Go! Loan Department Processing
Go! Share Draft Processing
Go! ATM/Debit (PIN) Processing
Go! Online Banking/Audio Response
Go! Online Credit Card Processing
Go! Debit (Signature) Processing
Go! ACH Processing
Go! Phone Operator Processing
Go! Bill Payment Processing-Batch
Go! Certificate Processing
Go! Direct Mail Posting
Go! Member Adjustment Processing
Go! Member Transfers
Go! Payroll Processing
Go! Wire Transfer Processing
Go! Stop Payment Fee Processing
Go! Automatic System Processing

For example, the graphic on the next page shows the highest number of debit card transactions for any member was 255 during the month of May. That breaks down to about 8.2 debit card transactions per day.

Number of Transactions by Member in the Debit Card Origin (Tool #775)

Member Analysis - Transaction Activity				Debit (Signature) Processing
Month/year	May 2021	# Records	5,918	Filter Individual
Branch ID	00 All Branches			
Account #	Orig	Name	# of Transactions	
			255	
			249	
			225	
			216	
			178	
			177	
			171	
			165	
			163	
			163	
			163	
			161	
			161	
			161	
			160	
			156	
			154	
			151	

Use these statistics to determine how to set the number of transactions to watch for in the configuration settings. Below we show an example of a velocity trigger pattern.

Velocity Trigger Pattern Configuration Screen (Tool #101)

Session 0 CU*BASE GOLD -
File Edit Tools Help

Configure Abnormal Activity Monitoring Settings

CHANGE

Set Up Transaction Patterns to Monitor

Pattern name V5 DBT DLY
Last maintained 06/10/2021 by /0 MARVIN JOHNSON (MGR)
AUDIT

Description Uncover high velocity debit card activity

Velocity Triggers

For individual memberships

Watch for 10 or more transactions during a period of 1 day(s)

Watch for a total daily transaction amount of 2,000 or more (whole dollars) during a period of 1 day(s)

For organizational memberships

Watch for 10 or more transactions during a period of 1 day(s)

Watch for a total daily transaction amount of 3,000 or more (whole dollars) during a period of 1 day(s)

i If both counts and \$ amounts are configured, the period must be the same for both.
In order to be shown in the monitoring queue, an account would need to match all criteria for that membership type.

Save/Update

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Run a Test on a Pattern Configuration

Use the “Run a test” option in **Tool #101 – Abnormal Activity Monitoring Config** to test how the changes you made affect the accounts that populate the dashboard.

Abnormal Activity Monitoring Config (Tool #101)

Pattern	Type	Description	Last Maint	By
I1 SB #	Idle	Idle account activity for shared branching	05/23/2021	
I10 Wire #	Idle	Idle activity for wire transfers	05/23/2021	
I12 RDC #	Idle	Idle account activity for RDC transactions	05/23/2021	
I3 ATMPOS#	Idle	Idle account activity ATM/POS	05/23/2021	
I4 P2P #	Idle	Idle activity on P2P transactions	05/23/2021	
I5 Debit #	Idle	Idle activity on debit card	05/23/2021	
I6 CC #	Idle	Idle activity credit card	05/23/2021	
I7 ACH #	Idle	Idle activity for ACH	05/23/2021	
I8 Draft #	Idle	Idle activity for share drafts	05/23/2021	
I9 HB #	Idle	Idle activity home banking	05/23/2021	
O1 Debit \$	Out-of-Ordinary	Out of the ordinary debit card activity	05/23/2021	
O10 HB \$	Out-of-Ordinary	Out of the ordinary home banking transfers	05/23/2021	
O2 ACH \$	Out-of-Ordinary	Out of the ordinary ACH activity	05/23/2021	
O3 ATM \$	Out-of-Ordinary	Out of the ordinary ATM deposit activity	05/23/2021	
O4 ATMPOS\$	Out-of-Ordinary	Out of the ordinary all ATM/POS activity	05/23/2021	
O5 CC #	Out-of-Ordinary	Out of the ordinary credit card activity	05/23/2021	
O6 RDC #	Out-of-Ordinary	Out of the ordinary RDC activity	05/23/2021	
O7 Heloc#	Out-of-Ordinary	Out of the ordinary HELOC activity	05/23/2021	
O8 TLR #	Out-of-Ordinary	Out of the ordinary teller line transactions	05/23/2021	
O9 Dfts #	Out-of-Ordinary	Out of the ordinary draft clearings	05/23/2021	

■ Edit ■ Copy ■ Delete ■ Run a test

■ View

Add Pattern

Data Source

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TR (7178) 8/09/21

Repeat this process until you are comfortable that you have a reasonable review population for each pattern.

Review Your Results for Needed Adjustments

Then run **Tool #537 – Monitor Abnormal Transaction Activity** and review resulting accounts for at least 2-5 days.

Monitor Abnormal Activity – Transaction Patterns (Tool #537)

Session 0 CUP*BASE GOLD

File Edit Tools Help

Monitor Abnormal Activity

Transaction Patterns

Date to monitor: Jun 17, 2021 [MMDDYYYY]

Account base to monitor: []

Flag if member age is below [] or above []

Show only members with due diligence flag [Select]

Show results only for pattern(s) [Select]

Show most recent notes for these memo types [Select]

DD	Account	Member Name	Age	*	Pattern	Trigger
1			67		09 Dfts #	999% incr in trans \$ over 3 days compared to 90-day avg
0			73		09 Dfts #	999% incr in trans \$ over 3 days compared to 90-day avg
0			69		01 SB DLY	3 trans totaling \$10,500 over a period of 3 days
0			60		010 Wires	4 trans over period of 30 days
7			44		010 Wires	8 trans over period of 30 days
0			53		010 Wires	4 trans over period of 30 days
1			75		010 Wires	4 trans over period of 30 days
6			6		010 Wires	4 trans over period of 30 days
3			47		02 RDC 2DV	2 trans totaling \$3,239 over a period of 1 days
1			52		02 RDC 2DV	3 trans totaling \$1,085 over a period of 1 days
1			38		02 RDC 2DV	3 trans totaling \$1,503 over a period of 1 days
1			32		02 RDC 2DV	2 trans totaling \$919 over a period of 1 days
1			41		02 RDC 2DV	3 trans totaling \$1,128 over a period of 1 days
1			42		02 RDC 2DV	2 trans totaling \$1,963 over a period of 1 days
1			36		02 RDC 2DV	2 trans totaling \$1,274 over a period of 1 days
1			48		02 RDC 2DV	2 trans totaling \$1,225 over a period of 1 days

☐ Inquiry
 ☐ Tracker Review
 ☐ Current Month Activity
 ☐ View Pattern Config

Total # of accounts: 60
 Total # of employee accounts (highlighted): 0

Export | Member Connect | Show Tracker Info | Refresh | Common Bonds | Print Report

Data Source

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There may be instances where less time is needed to assess whether a pattern needs to be adjusted. For example, you may want to adjust your pattern if your test run yields a large number of accounts with normal activity.

How to Use the Configuration Tracking Template

Documenting the Existing Config and Subsequent Changes

Track Before Making Configuration Changes

For each applicable pattern, document the existing configuration prior to making adjustments. Maintaining a record of changes provides written support for when and why a pattern configuration was changed. It also enables the credit union to revert back to a prior configuration if necessary.

IMPORTANT NOTE: It is not necessary to document the default configuration; in many instances they are wide open casting a broad net. This process is intended to record the initial and subsequent manual adjustments to the configuration.

The **Configuration Tracking Template** is used to document the existing configuration and subsequent changes.



Configuration Tracking Template

ABC Credit Union									
Changed by	Pattern	Origin Code(s)	Description	Initial Configuration Date					Date of Change
1	I1 SB #	n/a	Idle account activity for shared branching	60 days 60 days 60 days	1 1,000.00 1 \$ 1,000.00	or more transactions following a period of inactivity or more following a period of inactivity of or more transactions following a period of inactivity or more following a period of inactivity of	120 days 120 days 120 days 120 days		
2	I2 RDC #	4	Idle account activity for RDC transactions	60 days 60 days 60 days	2 \$ 250.00 2 \$750	or more transactions following a period of inactivity or more following a period of inactivity of or more transactions following a period of inactivity or more following a period of inactivity of	60 days 60 days 60 days 60 days		
3	I3 ATMPOS#	13	Idle account activity ATM/POS	90 days 90 days 90 days	2 \$ 500.00 2 \$ 500.00	or more transactions following a period of inactivity or more following a period of inactivity of or more transactions following a period of inactivity or more following a period of inactivity of	90 days 90 days 90 days 90 days		
4	I4 P2P #	11	Idle activity on P2P transactions	60 days 60 days 60 days	2 \$ 500.00 2 \$ 500.00	or more transactions following a period of inactivity or more following a period of inactivity of or more transactions following a period of inactivity or more following a period of inactivity of	90 days 90 days 90 days 90 days		
5	I5 Debit #	16	Idle activity on debit card	30 days 30 days 30 days	2 \$ 500.00 2 \$ 500.00	or more transactions following a period of inactivity or more following a period of inactivity of or more transactions following a period of inactivity or more following a period of inactivity of	60 days 60 days 60 days 60 days		

How to Use the Review Tracking Template

Documenting the Account Review

Document Your Accounts Reviewed

An actual review of account transactions is the best way to distinguish false positives from those that have potentially fraudulent activity.

Use the Review Template to document the results of your review of accounts that appear in **Tool #537 – Monitor Abnormal Transaction Activity**.

Review Tracking Template

ABC Credit Union									
#	Activity Date	Review Date	Pattern	Account	Trigger	Configuration	Review Notes	Worthy of Review	False Positive
1	4/22/2021	4/23/2021	V7 ACH DLY	XXXXX	10 trans totaling \$8279 over 1 day	10 or more trans during a period of 1 day and \$7500 or more during 1 day			X
2	4/22/2021	4/23/2021	I7 ACH #	XXXXX	2 trans totaling \$5531 after 90 days inactivity	1 or more trans after 90 days of inactivity and \$5000 or more after 90 days			X
3	4/22/2021	4/23/2021	V5 DBT DLY	XXXXX	14 trans totaling \$68911 over 3 days	8 or more trans during a period of 3 days and \$10000 or more during 3 days		X	
4	4/22/2021	4/23/2021	V9 HB DLY	XXXXX	5 trans totaling \$150000 over 1 day	5 or more trans during a period of 1 day and \$10000 or more during 1 day		X	
5	4/22/2021	4/23/2021	V5 DBT DLY	XXXXX	11 trans totaling \$10196 over 3 days	8 or more trans during a period of 3 days and \$10000 or more during 3 days			X
6	4/22/2021	4/23/2021	V9 HB DLY	XXXXX	6 trans totaling \$80000 over 1 day	5 or more trans during a period of 1 day and \$10000 or more during 1 day		X	
7	4/22/2021	4/23/2021	I7 ACH #	XXXXX	1 trans totaling \$6583 after 90 days inactivity	1 or more trans after 90 days of inactivity and \$5000 or more after 90 days			X
8									
9									
10									
11									
12									
								Worthy of Review	3 43%
								False Positive	4 57%
								Total	7

How to Use the Hit Tracking Template

Documenting the False Positive Rate

Determining the False Positive Rate

To determine the false positive rate, it is important to review an adequate sample of accounts within the origin under consideration and over an ample amount of time.

Use the **Hit Tracking Template** to determine the ratio of false positives vs. accounts with potentially fraudulent activity, i.e., accounts worthy of review.

Hit Tracking Template

ABC Credit Union			Activity Date	Activity Date	Activity Date	Activity Date	Activity Date	5/17 - 5/21				
Pattern	Type	Description	5/17/2021	5/18/2021	5/19/2021	5/20/2021	5/21/2021	Total	WOR	FP	FP Ratio	Raise / Lower / Remain
1 I1 SB#	Idle	Idle activity for shared branching	NH	NH	1	1	NH	2	1	1	50%	Remain
2 I2 RDC#	Idle	Idle activity for RDC	NH	NH	NH	NH	NH	0	0		0%	Lower
3 I3 ATMPOS#	Idle	Idle activity for ATM/POS	1	1	2	2	1	7	2	5	71%	Raise
4 I4 P2P#	Idle	Idle activity for P2P	NH	NH	NH	NH	NH	0	0		0%	Lower
5 I5 Debit#	Idle	Idle activity for debit card	NH	NH	NH	1	1	2	1	1	50%	Remain
6 I6 CC#	Idle	Idle activity for credit card	NH	NH	NH	NH	NH	0	0		0%	Lower
7 I7 ACH#	Idle	Idle activity for ACH	2	NH	NH	NH	NH	2	1	1	50%	Remain
8 I8 Draft#	Idle	Idle activity for share drafts	NH	NH	NH	NH	NH	0	0		0%	Lower
9 I9 HB#	Idle	Idle activity for home banking transfers	NH	NH	NH	NH	1	1	0	1	100%	Remain
10 I10 Wire#	Idle	Idle activity for wire transfers	NH	NH	NH	NH	NH	0	0		0%	Lower
11 01 Debit\$	Out-of Ord	Out of the ordinary debit card activity	2	1	1	2	3	9	4	5	56%	Remain
12 02 ACH\$	Out-of Ord	Out of the ordinary ACH activity	1	NH	NH	NH	1	2	0	2	100%	Remain
13 03 ATM#	Out-of Ord	Out of the ordinary ATM activity	NH	2	3	4	5	14	4	10	71%	Raise
14 04 ATMPOS\$	Out-of Ord	Out of the ordinary ATMPOS activity	2	5	4	4	9	24	6	18	75%	Raise
15 05 CC#	Out-of Ord	Out of the ordinary credit card activity	NH	NH	NH	NH	NH	0	0		0%	Lower
16 06 RDC#	Out-of Ord	Out of the ordinary RDC activity	NH	NH	NH	NH	NH	0	0		0%	Lower
17 07 HELOC#	Out-of Ord	Out of the ordinary HELOC activity	NH	NH	NH	NH	NH	0	0		0%	Lower
18 08 TLR#	Out-of Ord	Out of the ordinary teller line activity	NH	NH	NH	NH	NH	0	0		0%	Lower
19 09 Dfts#	Out-of Ord	Out of the ordinary draft clearings	1	3	7	8	9	28	5	23	82%	Raise
20 010 HB\$	Out-of Ord	Out of the ordinary home banking transfers	NH	1	1	1	1	4	1	3	75%	Remain
21 V1 SB DLY	Velocity	Excessive shared branch activity	NH	1	2	2	3	8	2	6	75%	Raise
22 V2 RDC 2DY	Velocity	Excessive RDC activity	NH	NH	NH	NH	NH	0	0		0%	Lower
23 V3 ATM DLY	Velocity	Excessive ATM or POS activity	2	1	NH	2	2	7	3	4	57%	Remain
24 V4 P2P DLY	Velocity	Excessive P2P activity	1	2	2	2	2	9	5	4	44%	Remain
25 V5 DBT DLY	Velocity	Excessive DBT activity	NH	NH	2	NH	NH	2	1	1	50%	Remain
26 V6 CC DLY	Velocity	Excessive CC activity	NH	NH	NH	NH	NH	0	0		0%	Lower

For each applicable pattern, record the number of accounts reviewed and the date of the review. Enter "NH", i.e. "no hits" if the pattern returned no results.

Adjusting Your Pattern Based on False Positive Rate

An Example

Adjust the applicable pattern configurations based on the resulting ratios. The pattern criteria (days and/or dollar amounts) should be raised, lowered, or remain the same depending on the composition of false positives vs. accounts worthy of review. Conduct this analysis periodically—at least annually—in order to determine false positive rates and make necessary configuration adjustments.

IMPORTANT NOTE: The configuration change should not impact the 6 accounts that were worthy of review. Those accounts should still appear in results just as they did prior to the configuration change.

An Example

As an example, over the course of 5-days (5/17 – 5/21), 24 accounts were reviewed for out-of-the-ordinary ATM/POS activity. 75% of the accounts (18) were false positives. This is an indication that the number of transactions and/or dollar threshold is set too low. Consequently, the number of transactions and dollar threshold should be raised to capture fewer false positives.

False Positive Ratios

Pattern	Type	Description	5/17 - 5/21				
			Total	WOR	FP	FP Ratio	Raise / Lower / Remain
110 Wire#	Idle	Idle activity for wire transfers	0	0	0	0%	Lower
01 Debit\$	Out-of Ord	Out of the ordinary debit card activity	9	4	5	56%	Remain
02 ACH\$	Out-of Ord	Out of the ordinary ACH activity	2	0	2	100%	Remain
03 ATM#	Out-of Ord	Out of the ordinary ATM activity	14	4	10	71%	Raise
04 ATMPOS\$	Out-of Ord	Out of the ordinary ATMPOS activity	24	6	18	75%	Raise
05 CC#	Out-of Ord	Out of the ordinary credit card activity	0	0	0	0%	Lower
06 RDC#	Out-of Ord	Out of the ordinary RDC activity	0	0	0	0%	Lower
07 HELOC#	Out-of Ord	Out of the ordinary HELOC activity	0	0	0	0%	Lower
08 TLR#	Out-of Ord	Out of the ordinary teller line activity	0	0	0	0%	Lower
09 Dfts#	Out-of Ord	Out of the ordinary draft clearings	28	5	23	82%	Raise

IMPORTANT NOTE: Sometimes changing patterns impacts previously flagged accounts deemed worthy of review. **If this is unavoidable, use due diligence codes and follow-up trackers to mitigate the risk of a previously identified account slipping through the cracks after a configuration change.**

Best Practice Use of Due Diligence Codes

Applying due diligence codes to accounts that have been reviewed for abnormal activity is highly recommended. This enables you to track which accounts have already been reviewed and what conclusion was reached. An example is using one code to identify accounts that have been reviewed and the activity deemed not suspicious, and another code used to identify accounts that required continued monitoring.