

# EdgeML "Flash Deal" Manual

## Overview

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The EdgeML “Flash Deal” feature enables kiosks to utilize Edge AI to enhance customer experience and operational efficiency. Models are trained and executed locally at each kiosk, allowing dynamic and responsive machine learning (ML) applications.

This initial phase focuses on two key models:

**1. Product Suggestion Model (Model X)**

It predicts product suggestions based on historical buying patterns for the specific kiosk.

**2. Dynamic Discount Model (Model Y)**

It suggests discounts based on stock levels, estimated restock time, and product sales velocity.

Together, these models aim to increase revenue, reduce waste, and boost the sale of items with short expiration dates, such as fresh foods, salads, and sandwiches.

## How It Works

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### Workflow

**1. Customer Action:**

A customer selects an item from the fridge during a purchase session.

**2. Prediction Step 1 (Model X):**

Predicts other items the customer might want to buy based on historical purchase data.

**3. Prediction Step 2 (Model Y):**

Assesses the predicted items (from Model X) against stock levels, restock timing, and sales velocity. Each item receives a score.

**4. Suggestion Display:**

If an item’s score from Model Y meets or exceeds a configurable threshold:

- A suggestion is displayed to the customer.
- The discount level is dynamically calculated based on the score, capped by a maximum allowable discount.

## Key Criteria

### Factors Affecting Suggestions and Discounts

- **Model X: Product Pairing History**
  - Higher frequency of co-purchases = Higher score.
- **Model Y: Stock Dynamics**
  - **Stock Level:** Higher stock = Higher score.
  - **Days Until Restock:** Fewer days = Higher score.
  - **Sales Velocity:** Slower sales = Higher score.

### Focus on Expirable Items

The models heavily prioritize items with short expiration dates to reduce waste. However, the system can also suggest package deals for non-expirable items to boost overall sales.

- Items marked as **ISExpireable** are heavily favored in the algorithm.

### Benefits

- **Revenue Growth:**  
Increased sales from cross-suggestions and targeted discounts.
- **Waste Reduction:**  
Improved metrics for items with short expiration dates.
- **Customer Experience:**  
Real-time, personalized offers create a more engaging shopping experience.

## Technical Details

### Model Training and Execution

- **Training:**  
Occurs during kiosk reboot in the background.
  - **Scope:** Limited to items in inventory.
  - **Duration:** A few seconds.
- **Prediction:**
  - Latency: <100ms.
  - Impact: Negligible effect on overall kiosk performance.

## Settings and Configuration

Setting	Description	Example Value
<b>EdgeMLFeatures</b>	Enables dynamic pricing for waste reduction.	FlashDeal
<b>EdgeMLMaxDiscount</b>	Maximum discount allowed by the algorithm.	50 (percentage)
<b>EdgeMLDiscountThreshold</b>	Minimum discount for Flash Deal to apply. Or FlashDeal won't show	15 (percentage)
<b>FlashDealDecimals</b>	Rounds discount to closest price based on number of decimals. -1 is default and will use default number of decimals, usually 2.	0, 1 or -1

## Localizations

Keyword	Description	Default
<b>ml_price_discount</b>	The @0 will be replaced with the new discounted price of the flash deal product.	NOW @0
<b>ml_select_title</b>	The title text on the flash deal card.	FLASH DEAL

## Reporting and Tracking

### Receipts and Integration

- **Price Type for Line Items:**
  - **Type 40:** Individual line items.
  - **Type 41:** Reporting purposes.

### Validation Metrics

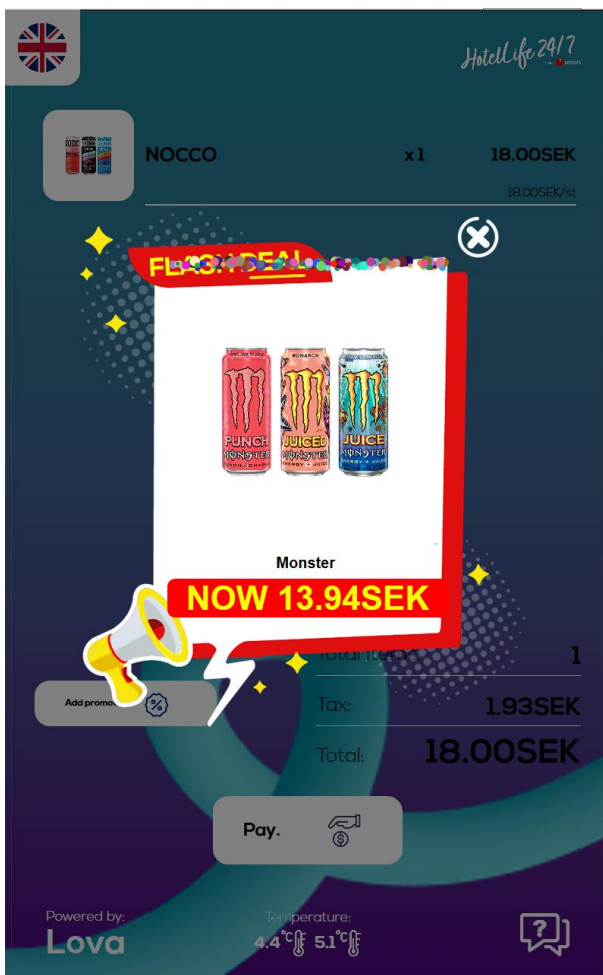
- Monitor the impact through waste tracking.
- Metrics should reflect a reduction in waste due to sales influenced by the new Flash Deal pricing.

## Requirements

- **Software Versions:**
  - **DataService:**  $\geq 0.414$
  - **InventoryOS:**  $> 1.275$
  - **MailQueueSender:**  $\geq V147$

This feature brings together innovative ML approaches to optimize sales, minimize waste, and enhance customer satisfaction, all while ensuring robust and responsive kiosk performance.

### Kiosk:



### Transaction Search:

K342D241126142505	<a href="#">#322483</a>	<a href="#">#10946 Polarkämma Ost</a>	1	<a href="#">1304741</a>	APP	Purchase	12.5	1.5	12	14
K342D241126142505	<a href="#">#322483</a>	<a href="#">#10 Red Bull 330ml</a>	1	<a href="#">1304741</a>	APP	Purchase	10.71	1.29	12.04	12
K342D241126142505	<a href="#">#322483</a>	<a href="#">#6666 Wasa Sandwich To</a>	1	<a href="#">1304741</a>	APP	Purchase	8.93	1.07	11.98	10
K342D241126142505	<a href="#">#322483</a>	<a href="#">#266 PANT 1 KR</a>	1	<a href="#">1304741</a>	APP	Purchase	0.89	0.11	12.36	1
K342D241126142505	<a href="#">#322483</a>	<a href="#">Flash Deal</a>	1	<a href="#">1304741</a>	APP	External Reduc...	-2.95	-0.35	11.86	-3.3

## Flash deal report:

Can be used to track Flash deal effects by showing revenue, waste and flash deal usage per kiosk and month

Operator | Reports -> Statistical -> Flash Deal Report

### Flash Deal Report

From: 2025-01-01 To: 2025-01-15 Kiosk ID: 342

Year	Month	Kiosk ID	External Reference	Store Name	Transactions	Item Count	Flash deals	% Flash deal transactions	Revenue	Flash Deal Discount	Waste Count
2025	January	342		Instant Lunchr...	104	196	6	5.77	1996	-49.54	0

## Flash deal transactions report:

Can be used to lookup transactions that includes a package deal to see what product a package deal occurred on and what was bought together with it

Operator | Reports -> Statistical -> Flash Deal Transactions

### Flash Deal Transactions

From: 2025-04-21 To: 2025-05-05 Kiosk ID: 342

Transaction Date	Kiosk ID	Machine ID	Store Name	Retail Host	Transaction ID	Instant ID	Price Type	Product ID	External Referen	Product	Quantity	Price	Tax	No Tax Flash	Flash Deal Tax	No Tax Total	Tax Total	Total With Tax
2025-04-30 05:55 CEST	342	KIOSK342	Instant Lunchroom	Instant Syst...	1489361	K342025043005456	Purchase	8668		#6666:Wasa_Sandwich_3p	2	8.93	1.07	-8.94	-1.06	-0.02	0.82	0
2025-04-29 13:21 CEST	342	KIOSK342	Instant Lunchroom	Instant Syst...	1487361	K342025042913209	Purchase	59118		#10919:Kneckerbrot_6p	1	8.82	1.18	0	0	8.82	1.18	11
2025-04-29 13:21 CEST	342	KIOSK342	Instant Lunchroom	Instant Syst...	1487561	K342025042913209	Purchase	6566		#6666:Wasa_Sandwich_3p	1	8.93	1.07	-2.77	-0.33	6.16	0.74	6.9
2025-04-28 06:52 CEST	342	KIOSK342	Instant Lunchroom	Instant Syst...	1486660	K3420250428065235	Purchase	12325		#12325:Pokemon_CashShi...	1	17.86	2.14	-8.93	-1.07	8.93	1.07	10
2025-04-24 08:25 CEST	342	KIOSK342	Instant Lunchroom	Instant Syst...	1484467	K3420250424082528	Purchase	12180		#12180:DunkinBowl	1	7.14	0.86	-3.57	-0.43	3.57	0.43	4
2025-04-24 08:25 CEST	342	KIOSK342	Instant Lunchroom	Instant Syst...	1484667	K3420250424082528	Purchase	12560		#12560:Procter_DuPonts_D...	1	17.86	2.14	0	0	17.86	2.14	20
2025-04-22 13:02 CEST	342	KIOSK342	Instant Lunchroom	Instant Syst...	1483342	K3420250422130959	Purchase	59919		#10919:Bubble_MultiChoc...	1	22.32	2.68	-3.79	-0.46	16.53	2.22	20.75
2025-04-22 13:02 CEST	342	KIOSK342	Instant Lunchroom	Instant Syst...	1483342	K3420250422130959	Purchase	59911		#10911:Nocua_Blood_Chang...	1	16.07	1.93	0	0	16.07	1.93	18
2025-04-22 12:41 CEST	342	KIOSK342	Instant Lunchroom	Instant Syst...	1483316	K3420250422124116	Purchase	11547		#11547:Starbuck_systems_...	1	21.43	2.57	0	0	21.43	2.57	24
2025-04-22 12:41 CEST	342	KIOSK342	Instant Lunchroom	Instant Syst...	1483316	K3420250422124116	Purchase	8666		#6666:Wasa_Sandwich_3p	1	8.93	1.07	-4.47	-0.53	4.46	0.94	5



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