

ETECHFLOW · MAGENTO 2 / ADOBE COMMERCE

# Banner Slider

A high-performance, FPC-safe banner & slider suite with smart targeting, rich banner types, built-in A/B testing and real conversion analytics.

Luma

Hyvä

GraphQL / Headless

REST API

Adobe Commerce

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**ETechFlow\_BannerSlider** · Module Documentation & User Guide

Compatible with Magento / Adobe Commerce 2.4.6 – 2.4.9 · PHP 8.1 – 8.4 · Hyvä ≥ 1.3

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# 1 · Overview

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## 1.1 What the module does

ETechFlow Banner Slider lets store owners build animated banner carousels and place them anywhere on the storefront — homepage, category, CMS pages or any layout block — entirely from the Magento admin.

Beyond a standard image slider, it adds four capabilities that turn passive banners into a measurable merchandising channel: **who** sees each banner (smart targeting), **what** a banner can be (video, HTML, product, countdown), **which** variant performs best (A/B testing), and **how much revenue** each banner actually drives (analytics + attribution).

## 1.2 Highlights

- **Smart rule-based targeting** — show banners by device, login state, customer group, country, cart contents, day/hour and UTM parameters.
- **Rich banner types** — image, video (YouTube / Vimeo / MP4), custom HTML, product card, and countdown timer.
- **Built-in A/B testing** — weighted variant split with automatic winner selection by CTR, add-to-cart rate or revenue.
- **Real analytics** — viewport impressions, clicks, add-to-cart and revenue attributed per banner, with a dashboard and CSV export.
- **Three storefronts** — Luma, Hyvä (Tailwind + Alpine, no jQuery), and GraphQL for headless/PWA.
- **Production-safe** — Full-Page-Cache / Varnish friendly, lazy-loaded media, beacon tracking, no layout shift.

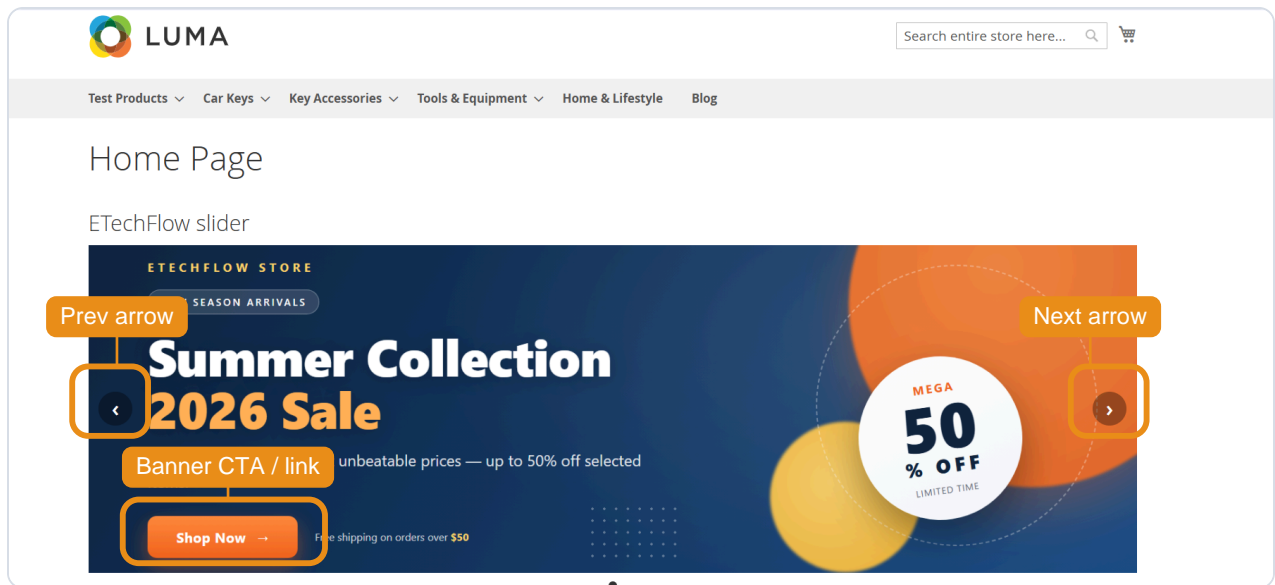


Figure 1 — The slider rendered on the storefront homepage.

### 1.3 Compatibility matrix

Magento / Adobe Commerce	2.4.6, 2.4.7, 2.4.8, 2.4.9
PHP	8.1, 8.2, 8.3, 8.4
Hyvä Themes	1.3 and newer (optional, via the Hyvä module)
Storefronts	Luma, Hyvä, GraphQL / headless (PWA Studio, Hyvä Checkout)
Caching	Built-in FPC and Varnish — fully supported

## 2 · Architecture

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### 2.1 The three modules

The suite ships as three independent Magento modules so you install only what your storefront needs.

Module	Responsibility	When to enable
<code>ETechFlow_BannerSlider</code>	Core — admin UI, database, business logic, Luma frontend, REST/Repository API. Required.	Always
<code>ETechFlow_BannerSliderHyva</code>	Hyvä storefront rendering (Tailwind + Alpine.js, no RequireJS/jQuery).	Only on Hyvä themes
<code>ETechFlow_BannerSliderGraphQL</code>	GraphQL schema & resolvers for headless / PWA / Hyvä Checkout.	Headless / PWA stores

#### Note

The Hyvä and GraphQL modules both depend on the core module and reuse all of its data and business logic — they only change how banners are *rendered* or *delivered*, never the underlying data.

### 2.2 Performance & FPC-safe design

Because the storefront HTML is cached by Full Page Cache / Varnish, the markup must be identical for every visitor. The module is built around this constraint:

- **Server renders all candidate banners once** (cache-friendly); per-visitor decisions — targeting, A/B variant selection — happen **in the browser**.
- **Lazy media** — videos use a click-to-load facade; images use lazy-loading + WebP/srcset where available; no Cumulative Layout Shift.
- **Beacon tracking** — analytics events are batched and sent via the browser `sendBeacon` API, never blocking page render.
- Per-visitor data (login, group, cart, country) arrives via Magento's `customer/section/load` endpoint, which is itself cache-aware.

### 2.3 Data model

Table	Holds
<code>etechflow_bannerslider_slider</code>	Slider definitions: behaviour, autoplay, A/B settings, winner, tracking config.
<code>etechflow_bannerslider_banner</code>	Banner records: type, media, content, targeting rules (JSON), visibility.
<code>etechflow_bannerslider_banner_slider</code>	Link table — which banner belongs to which slider, plus its A/B variant & weight.
<code>etechflow_bannerslider_stat</code>	Daily-aggregated events (impression / click / add-to-cart) and attributed revenue per banner.

## 3 · Installation & Setup

### 3.1 Install & enable

Copy the modules into `app/code/ETechFlow/` (or install via Composer), then run:

```
bin/magento module:enable ETechFlow_BannerSlider
bin/magento setup:upgrade
bin/magento setup:di:compile          # production mode only
bin/magento cache:flush
```

This creates the four database tables and registers the admin menu under **Content** → **Banner Slider**.

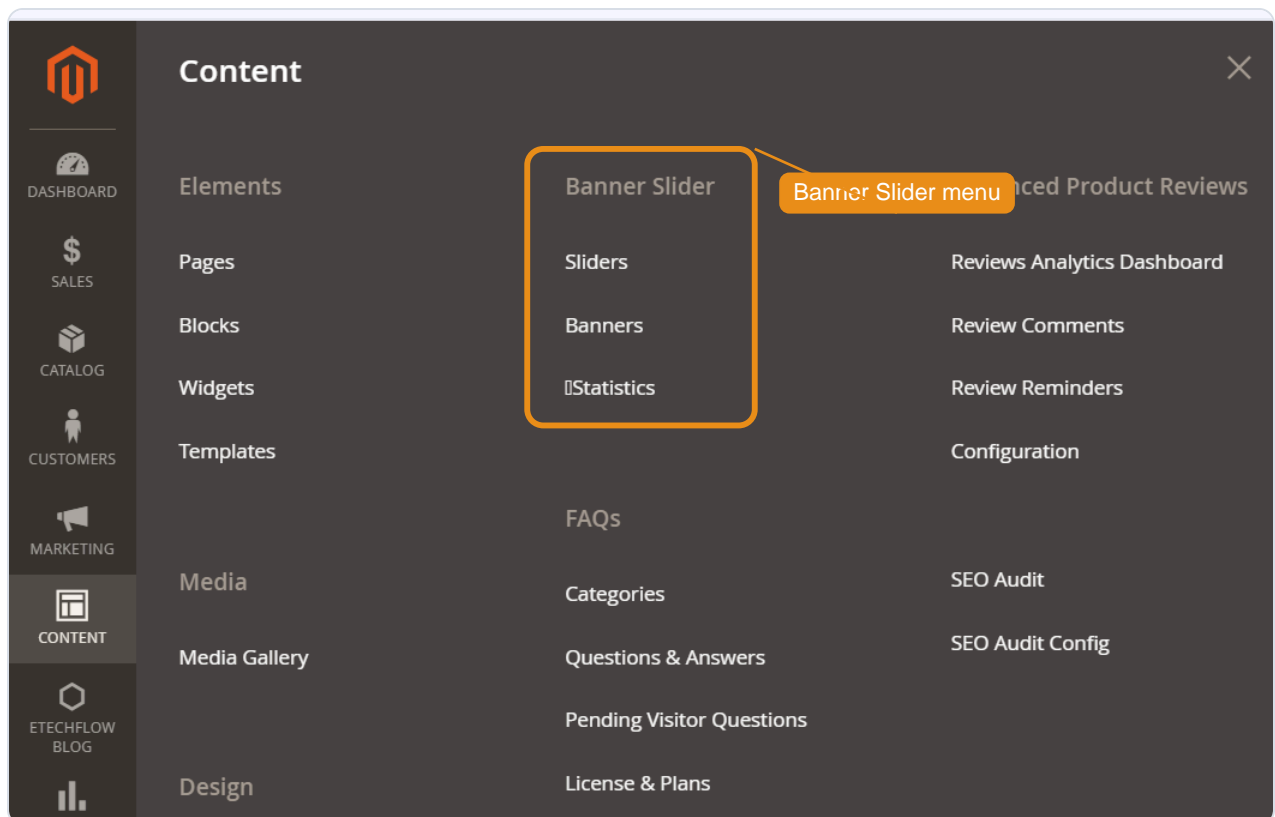


Figure 2 — Admin menu location.

### 3.2 Enabling the Hyvä module

**Important** — this is a manual, CLI-level step

The Hyvä support is a *separate module*. It does **not**

turn on automatically when a Hyvä theme is active, and there is no admin toggle for it (in Magento, whole modules are enabled only via the CLI). Enable it only on a Hyvä storefront:

```
bin/magento module:enable ETechFlow_BannerSliderHyva
bin/magento setup:upgrade
bin/magento cache:flush
```

Store theme	Core <b>BannerSlider</b>	<b>BannerSliderHyva</b>
Luma	enabled	<b>disabled</b> (keep its JS off the page)
Hyvä	enabled	<b>enabled</b> (manually, via CLI)

### 3.3 Configuration settings

Global settings live at **Stores** → **Configuration** → **ETechFlow** → **Banner Slider**.

Group	Setting	Purpose
General	Enable Module	Master on/off for all storefront output.
	Default behaviour	Fallback autoplay / speed defaults.
Performance	Async tracking	Send analytics via background beacon (recommended ON).
	Attribution window	Days a click stays credited for a later order.
Analytics	A/B auto-conclude	Let cron pick the winner automatically (opt-in).
	Min impressions	Threshold before a winner can be declared.
License	License key	Activation key (SP-XXXX) — see §13.

Scope: Default Config ? **Config scope** **Save Config** **save Config**

GENERAL	License	⌵
SECURITY	General	⌵
CATALOG	Performance	⌵
STORE PORTAL	Smart Targeting	⌵
CUSTOMERS	Analytics & Attribution	⌵

**Settings sections**

**ETechFlow > Banner Slider**

**Banner Slider**

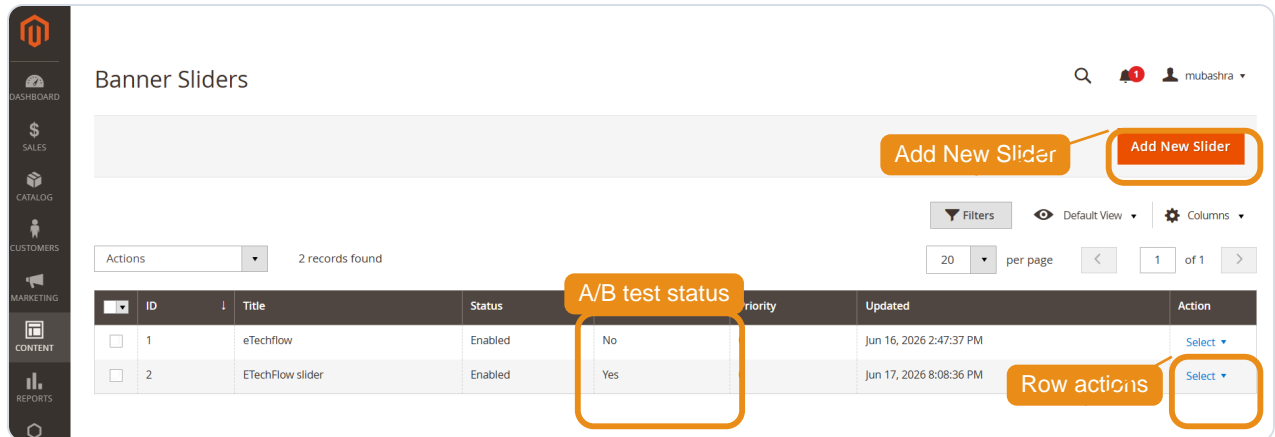
Advanced Product Reviews

Abandoned Cart Email

Figure 3 — Module configuration.

## 4 · Admin: Managing Sliders

A **slider** is the carousel container. It controls how banners animate and which banners belong to it. Manage them under **Content** → **Banner Slider** → **Sliders**.



The screenshot displays the 'Banner Sliders' management interface. At the top right, there are two 'Add New Slider' buttons. Below them are filters, a default view selector, and a columns selector. The table shows two records with the following data:

ID	Title	Status	A/B test status	Priority	Updated	Action
1	eTechflow	Enabled	No		Jun 16, 2026 2:47:37 PM	Select
2	ETechFlow slider	Enabled	Yes		Jun 17, 2026 8:08:36 PM	Select

Figure 4 — Sliders listing grid.

### Creating / editing a slider

The slider form has two parts — general behaviour and banner assignment.

- **Name & Status** — identify the slider and enable/disable it.
- **Behaviour** — autoplay on/off, autoplay speed (ms; falls back to 3500 ms if 0), arrows, bullets, pause-on-hover, loop.
- **A/B testing** — turn the slider into an A/B test and choose the optimization goal (see §8).
- **Tracking** — enable analytics and set the attribution window for this slider.

**New Slider** Save Slider

← Back Save and Continue Edit Save Slider

**General**

**Title (required)**

Title \*

Status: Enabled **Status**

Priority **Priority**

Other priority must be on multiple sliders match the same placement

**Slider Behaviour**

Autoplay:  No

Autoplay Interval (ms):

Transition Effect: Slide

Transition Duration (ms):

Figure 5 — Slider general settings.

**New Slider** ← Back Save and Continue Edit Save Slider

**Slider Behaviour**

Autoplay:  No **Autoplay & speed**

Autoplay Interval (ms): **Autoplay & speed**

Transition Effect: Slide **Transition effect**

Transition Duration (ms): **Transition effect**

Show Arrows:  No

Show Bullets:  No

Loop:  No

Pause on Hover:  No

Lazy Load Images:  No **Arrows, bullets, loop, lazy-load**

Defers off-screen slides to protect Core Web Vitals.

Figure 5b — Slider behaviour (continued): autoplay, transition, arrows, bullets, loop, pause-on-hover & lazy-load options.

## Assigning banners to a slider

At the bottom of the slider form, the **Banners** grid links banners to this slider. Pick a banner from the dropdown (shown as `Name [type] (#id)`), set its **display order**, and — when A/B is on — its **variant** and **weight**. A banner can belong to multiple sliders.

The screenshot shows a 'Banners' management interface. On the left is a vertical sidebar with icons for SALES, CATALOG, CUSTOMERS, MARKETING, CONTENT, REPORTS, ETECHFLOW, and STORES. The main area is titled 'Banners' and contains a table with columns: Banner, A/B variant, Weight, and Actions. The 'Banner' column has a dropdown menu open, listing: Summer Sale Hero [image] (#1), Banner 1 [image] (#2), Banner 4 [product] (#5), Banner 2 [video] (#6), Banner 3 [html] (#7), and Banner 5 [countdown] (#8). The 'A/B variant' column has a text input field. The 'Weight' column has a text input field and a trash icon. The 'Actions' column has a trash icon. Annotations in orange callouts point to: 'A/B variant' (the text input field), 'Banner = Name [type] (#id)' (the dropdown menu), 'Weight' (the weight input field), and 'Remove row' (the trash icon in the Actions column). Below the table, there is a section for 'A/B Testing' with a sub-header 'Group banners under variant labels (default, A, B...) for A/B tests.'

Banner *	A/B variant	Weight *	Actions
Summer Sale Hero [image] (#1)			
Summer Sale Hero [image] (#1)			
Banner 1 [image] (#2)			
Banner 4 [product] (#5)			
Banner 2 [video] (#6)			
Banner 3 [html] (#7)			
Banner 5 [countdown] (#8)			

Figure 6 — Assigning banners to a slider.

# 5 · Admin: Managing Banners

A **banner** is a single slide. Banners are created independently of sliders (so they can be reused) under **Content** → **Banner Slider** → **Banners**.

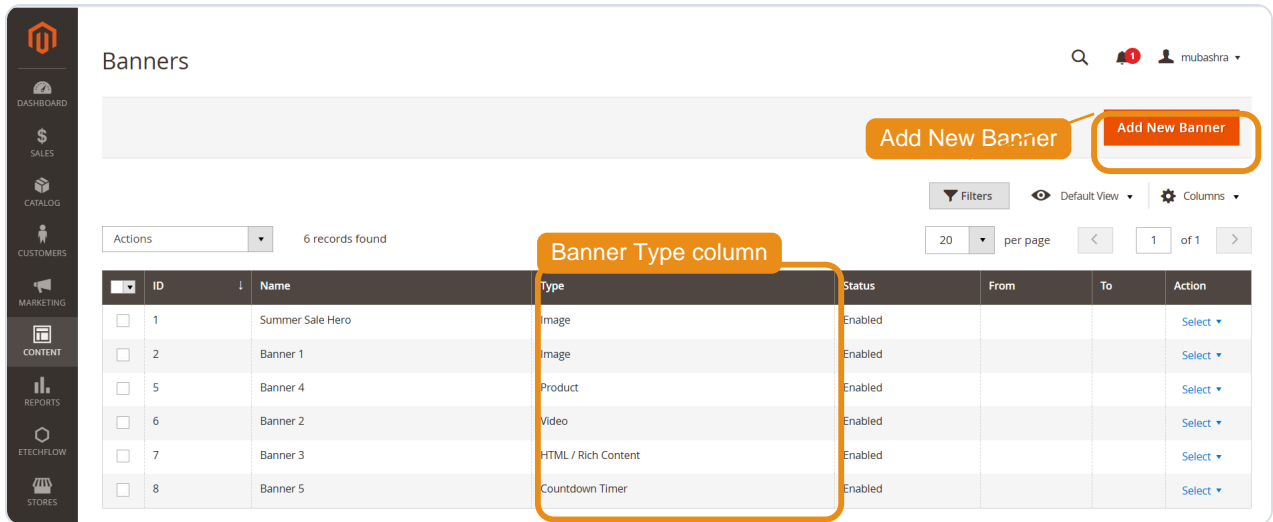


Figure 7 — Banners listing grid.

## The banner form

Every banner shares a common header — **Name**, **Status**, **Banner Type**, link URL/target, and visibility (store views & customer groups). Choosing a **Banner Type** reveals the fields relevant to that type and hides the rest.

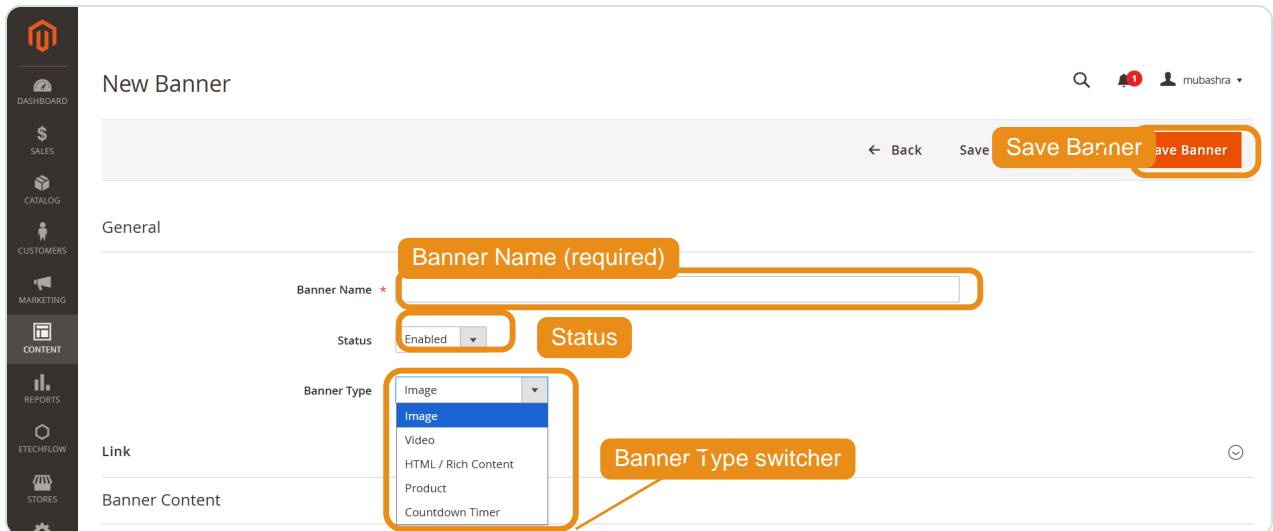


Figure 8 — The banner form and its type switcher.

### 5.1 The banner types

Each type is covered in detail in §7; the table below summarizes them.

Type	Key fields	Use for
Image	Image upload, alt text, link	Classic promotional banner.
Video	Video type (YouTube/Vimeo/MP4), URL, autoplay, mute	Hero video, product teaser.
HTML	Custom HTML/WYSIWYG content	Rich layouts, embeds.
Product	Product entity ID	Featured product card with price & add-to-cart.
Countdown	Target date/time, hide-on-expire	Sale / launch urgency timer.

## Smart Rule-Based Targeting

Show the right banner to the right visitor — without breaking page cache.

Each banner can carry targeting rules. The server still renders every candidate banner (so the cached HTML is identical for everyone); the visitor's browser then evaluates the rules and reveals only the banners that match. This keeps the module 100% FPC/Varnish-safe.

### Targeting dimensions

All conditions are combined with **AND**; any dimension left empty means "any".

Dimension	Evaluated	Examples
Device	Instantly in-browser (matchMedia)	Mobile only / desktop only
Day of week / Hour range	Instantly in-browser (clock)	Weekend banner; happy-hour 18:00–21:00 (wraps midnight)
UTM source / medium / campaign	Instantly (query → cookie <code>etf_utm</code> , 30 days)	Show only to <code>?utm_source=newsletter</code> visitors
Login state	Customer-data section	Logged-in only / guests only
Customer groups	Customer-data section	Wholesale group only
Cart quantity / subtotal range	Customer-data section	Subtotal ≥ \$50 → free-shipping banner
Country	Customer-data section (GeoIP/CDN header)	Region-specific promo

#### Two-phase evaluation (why it feels instant)

Local dimensions (device, day, hour, UTM) are decided immediately with no network call, so mismatched banners are pruned and matched ones shown right away. Network-dependent dimensions (login, group, cart, country) are applied a moment later when the customer-data section loads. A fail-open timeout guarantees banners are never stuck hidden on a slow connection.

### Configuring targeting

Open any banner and expand the **Smart Targeting** section. Fill only the dimensions you care about; leave the rest empty.

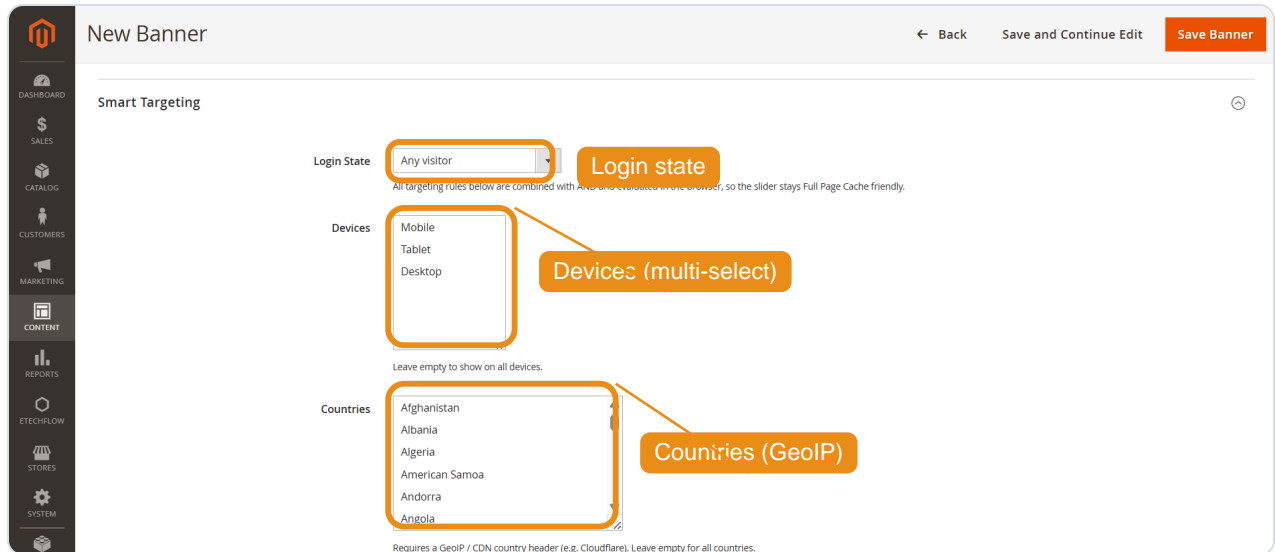


Figure 9 — Targeting rules on a banner.

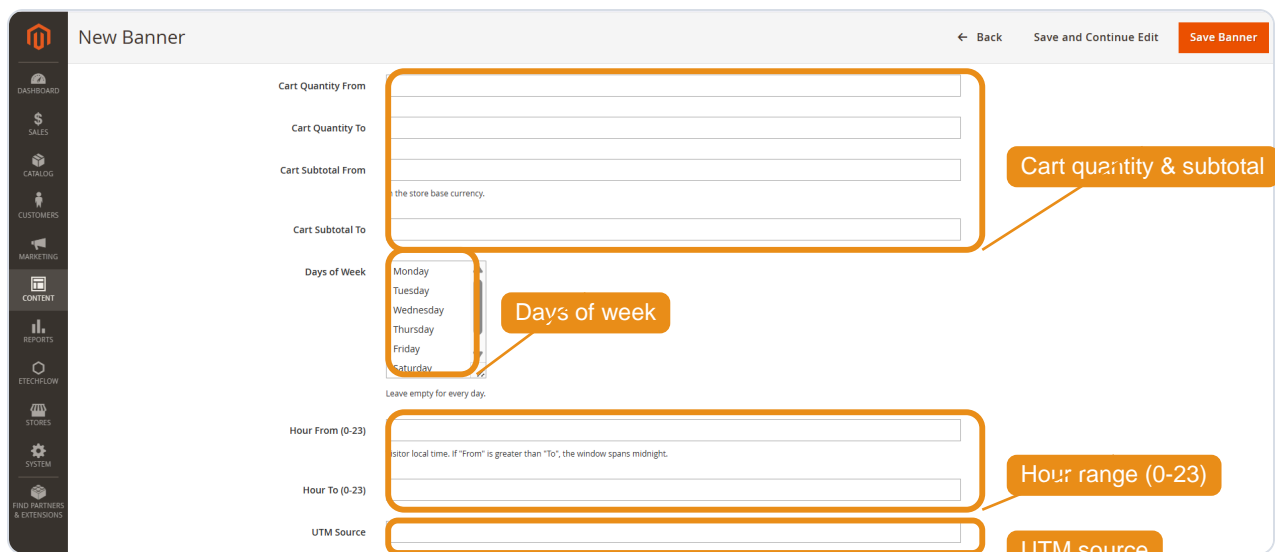


Figure 9b — Targeting (continued): cart, day/hour & UTM conditions.

## Banner Types Beyond Images

Five banner types — from a simple image to an interactive countdown — all in the same carousel.

### 7.1 Image

The classic banner. Upload an image, set alt text and an optional link. Images are lazy-loaded and served responsively.

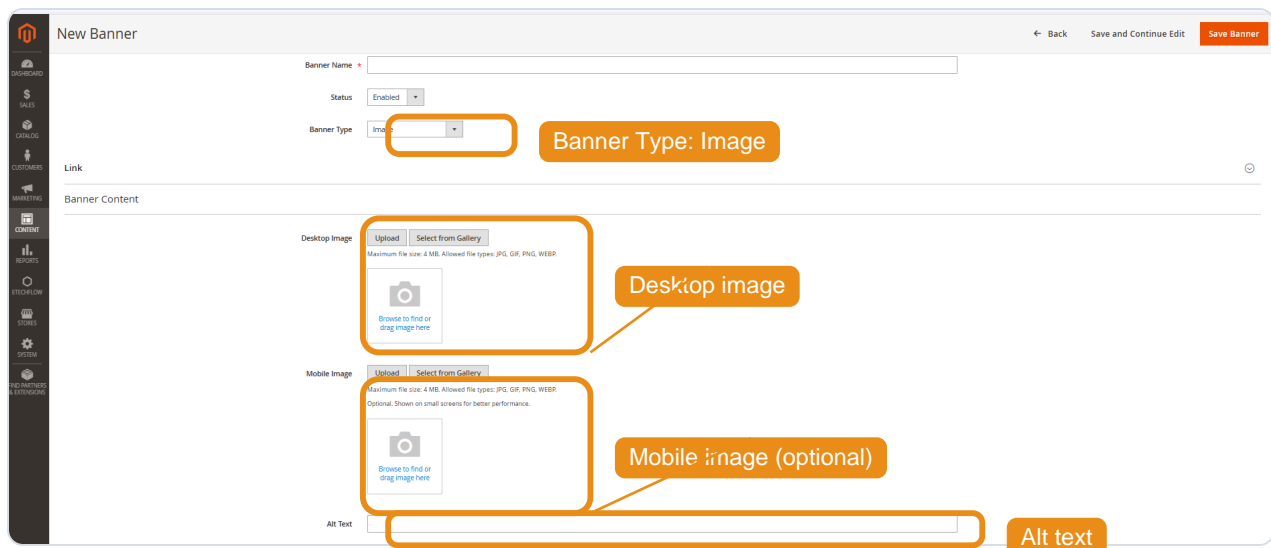


Figure 10 — Image banner fields.

### 7.2 Video

Supports **YouTube**, **Vimeo** and self-hosted **MP4**. A lightweight facade is shown first; the actual player/iframe is only injected when the slide is active or the visitor clicks play — and is torn down on leave so audio stops. Autoplay and mute are configurable.

#### Tip

The *Video Type* must match the URL (e.g. choose "YouTube" for a YouTube link) — playback resolution is strict about the type.

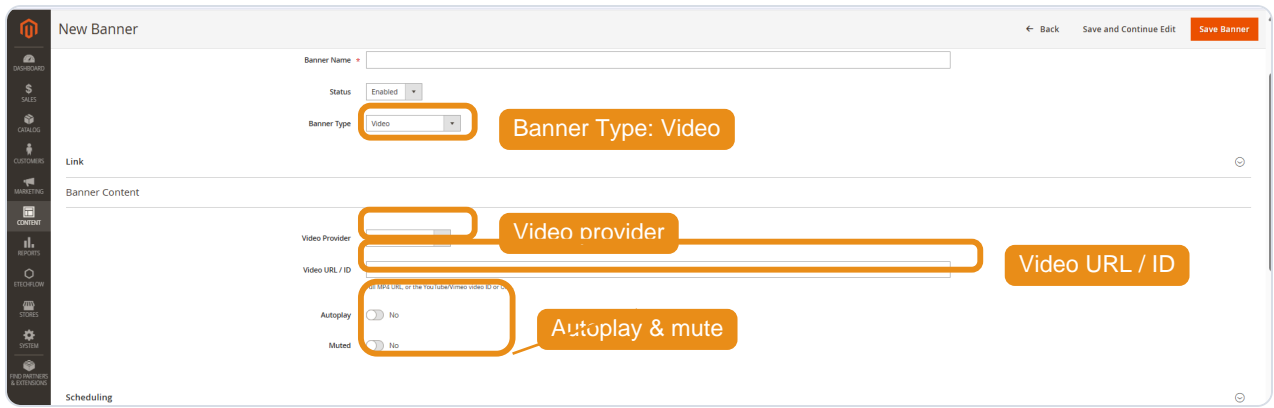


Figure 11 — Video banner fields.

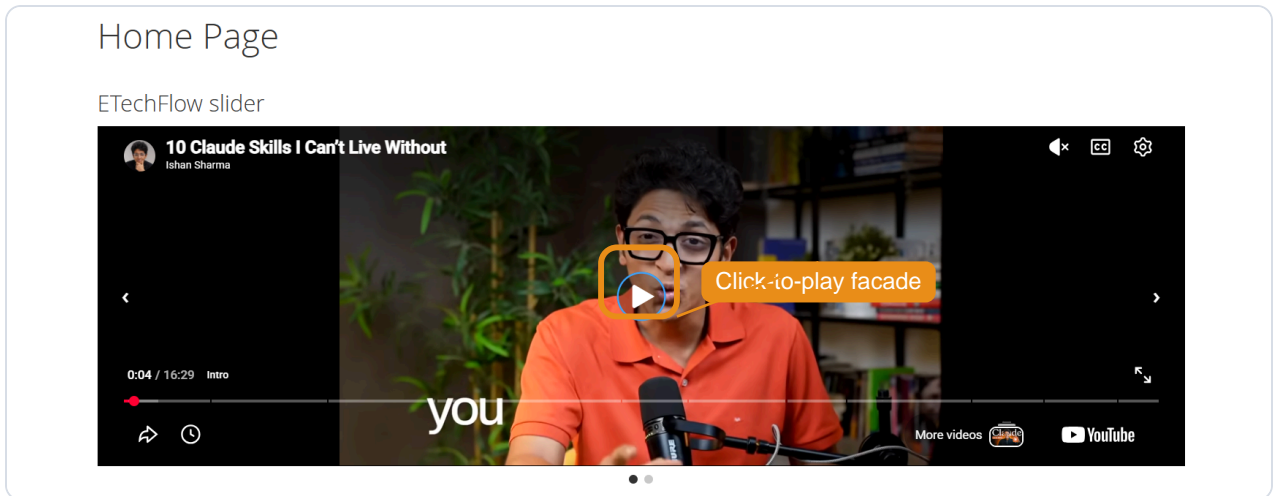


Figure 12 — Video banner on the storefront.

## 7.3 HTML

Drop in any custom HTML via the WYSIWYG editor — promo grids, embeds, custom markup. Rendered as-is inside the slide.

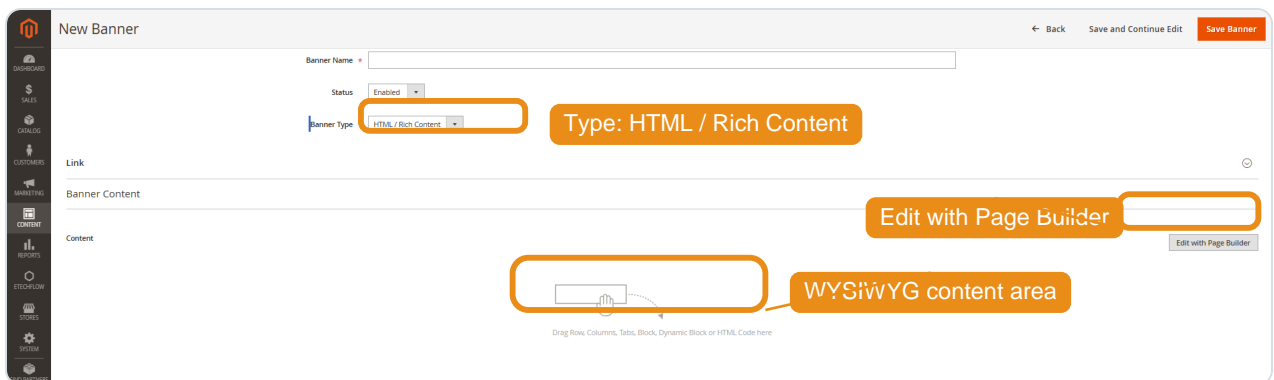


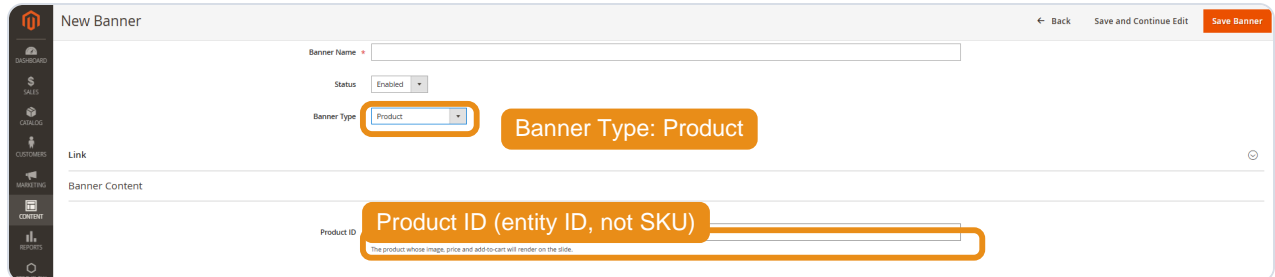
Figure 13 — HTML banner content.

## 7.4 Product

Enter a product's **entity ID** and the banner renders a live product card — name, image, final & regular price, and an FPC-safe add-to-cart button. Products that are unavailable are dropped automatically so the carousel stays clean.

### Note

The Product ID field takes the numeric *entity ID*, not the SKU.

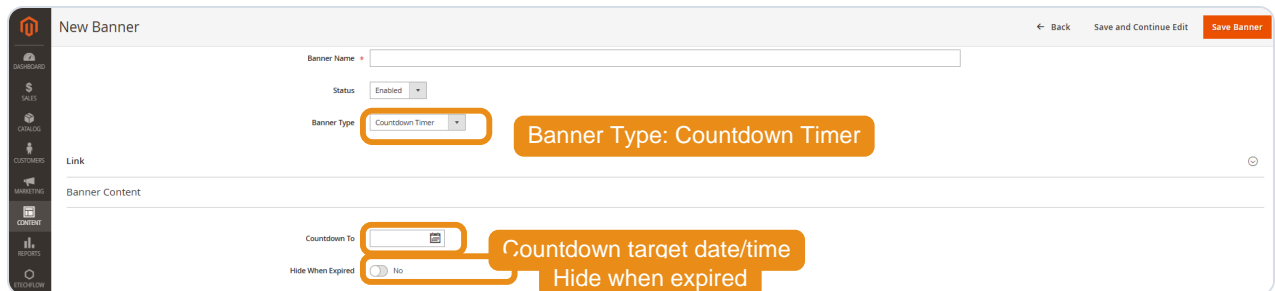


The screenshot shows the 'New Banner' configuration page. The 'Banner Name' field is empty. The 'Status' is set to 'Enabled'. The 'Banner Type' dropdown is set to 'Product', with an orange callout box labeled 'Banner Type: Product'. The 'Link' field is empty. The 'Banner Content' section has a 'Product ID' field with the text 'Product ID (entity ID, not SKU)' and a callout box pointing to it. Below the field is a small note: 'The product whose image, price and add-to-cart will render on the slide.'

Figure 14 — Product banner.

## 7.5 Countdown

A timezone-aware countdown to a target date/time — ideal for sales and launches. The timer counts against the visitor's own clock, and expired countdowns are removed server-side (so cached pages never show a finished timer). Optionally hide the whole banner once it expires.



The screenshot shows the 'New Banner' configuration page for a 'Countdown Timer' banner. The 'Banner Name' field is empty. The 'Status' is set to 'Enabled'. The 'Banner Type' dropdown is set to 'Countdown Timer', with an orange callout box labeled 'Banner Type: Countdown Timer'. The 'Link' field is empty. The 'Banner Content' section has a 'Countdown To' field with a calendar icon and a callout box labeled 'Countdown target date/time'. Below it is a 'Hide When Expired' toggle switch set to 'No', with a callout box labeled 'Hide when expired'.

Figure 15 — Countdown banner.

## Built-In A/B Testing

Test banner variants against each other and let the data pick the winner.

### How it works

1. Turn on **A/B testing** on the slider and pick a goal: **CTR**, **add-to-cart rate**, or **revenue per impression**.
2. Assign banners to the slider as **variants** (A, B, ...) each with a **weight** that sets its share of traffic.
3. On the storefront, each visitor is assigned one variant — **weighted and sticky** via a cookie ( `etf_bs_ab_<sliderId>` ) so they always see the same one. All variants render server-side; the browser shows the chosen one (FPC-safe).
4. The module measures each variant by the chosen goal. A **winner** can be declared once the **minimum-impressions** threshold is met.
5. **Conclude** the test manually, or enable cron **auto-conclude**. Once concluded, only the winning variant is served — filtered server-side, so it stays fully cacheable.

#### Fair & cache-safe

Weighted selection runs client-side and is sticky per visitor, so caching never skews the split. Winner rates are computed *per impression* (not raw totals), so unequal weights don't bias the result.

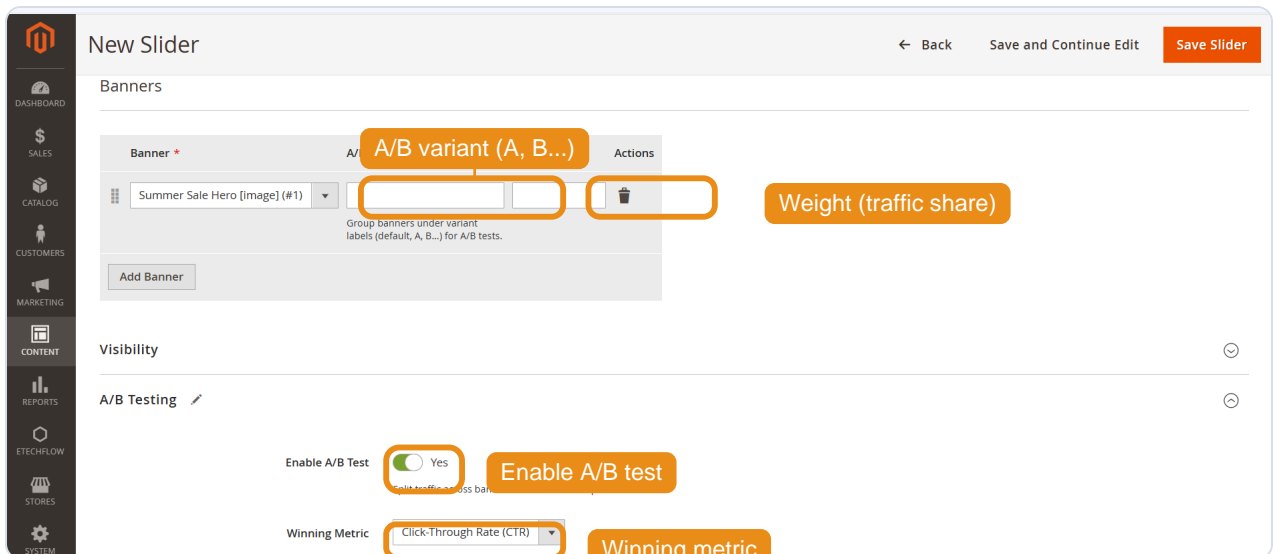


Figure 16 — Setting up an A/B test.

Banner	Type	Impressions	Clicks	CTR	Add to Cart	Orders	Revenue
Summer Sale Hero	Image	1,840	268	14.57%	96	22	\$2,640.00
Banner 3	Html	1,795	142	7.91%	47	9	\$1,080.00

**A/B Tests**

**EtechFlow slider** Goal: Ctr Winner: A

Variant	Impressions	CTR %	ATC %	Orders	Revenue
A	1,840	14.57%	5.22%	22	\$2,640.00
B	1,795	7.91%	2.62%	9	\$1,080.00

Figure 17 — A/B test results.

## Analytics & Conversion Attribution

See not just clicks, but the revenue each banner actually drives.

### What is tracked

Event	How it's captured
Impression	Fires when the banner actually enters the viewport (IntersectionObserver) — not just page load.
Click	On the banner link / CTA.
Add to cart	On the banner's add-to-cart action (product banners).
Revenue (order)	Attributed server-side when an order is placed (see below).

Events are batched in the browser and sent via `sendBeacon` to a lightweight endpoint, then stored in a **daily-aggregated** stats table — so tracking adds no measurable load and never blocks rendering.

### Conversion attribution

When a visitor clicks a banner, the module records it in a last-click cookie ( `etf_bs_attr` ). If that visitor later places an order within the **attribution window**, the order total is credited to that banner. This connects banners directly to revenue, not just clicks.

### The dashboard

Under **Content** → **Banner Slider** → **Statistics** you get KPI cards (impressions, clicks, CTR, add-to-cart, attributed revenue), a date-range filter, and a per-banner breakdown table. Everything can be exported to **CSV**.



DASHBOARD



SALES



CATALOG



CUSTOMERS



MARKETING



CONTENT



REPORTS



ETECHFLOW



STORES



SYSTEM

# Banner Slider Statistics

From  To

Date filter & CSV export

**3,635** IMPRESSIONS

**410** CLICKS

**11.28%** CTR

**143** ADD TO CART

**31** ORDERS

KPI cards

Banner	Type	Impressions	Clicks	CTR
Summer Sale Hero	Image	1,840	268	14.57%
Banner 3	Html	1,795	142	7.91%

Per-banner breakdown

## A/B Tests

### ETechFlow slider

Goal: Ctr

WINNER: A

Winner: A Variant results

Variant	Impressions	Clicks	CTR %
A	1,840	268	14.57%
B	1,795	142	7.91%

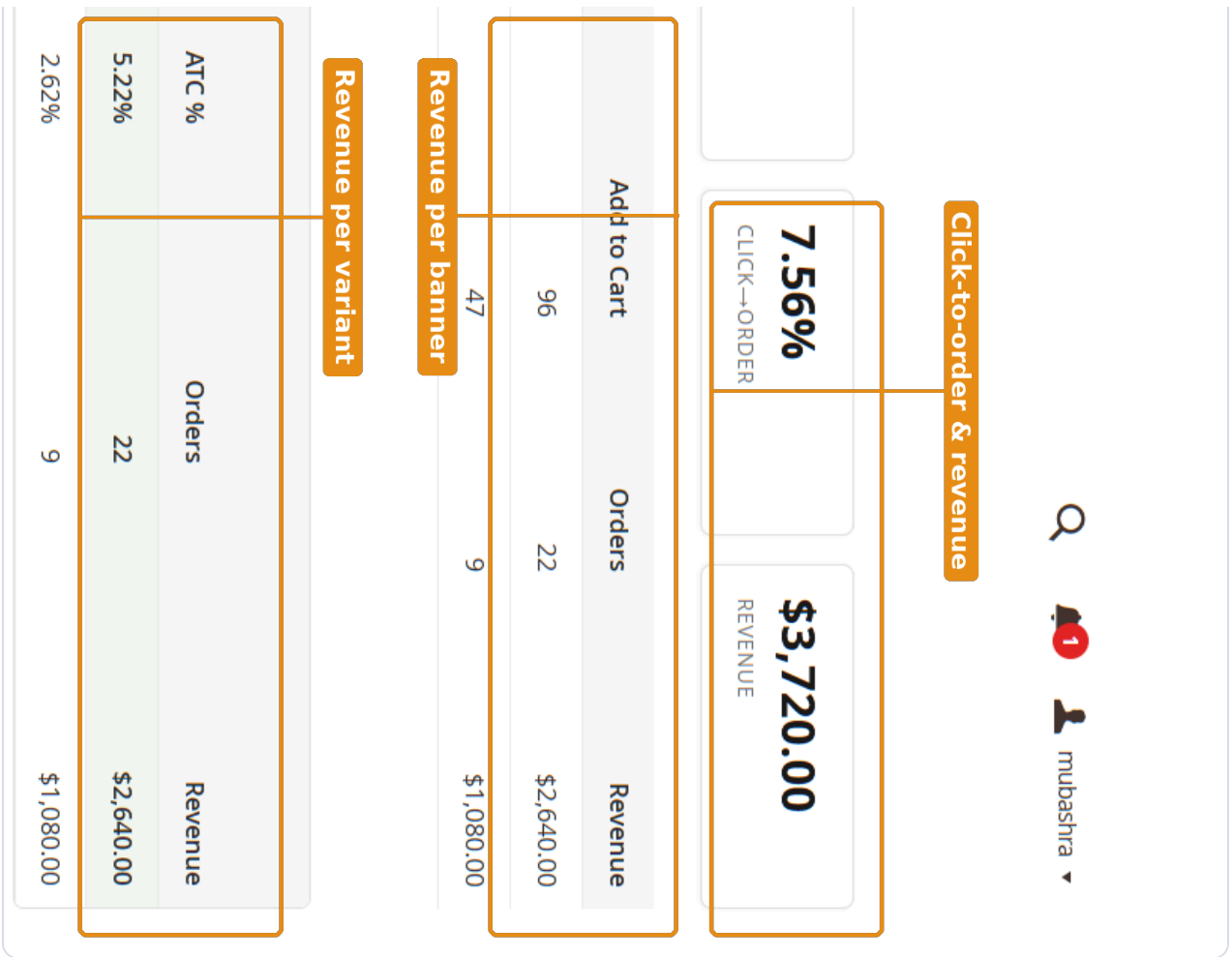


Figure 18 — Analytics dashboard.

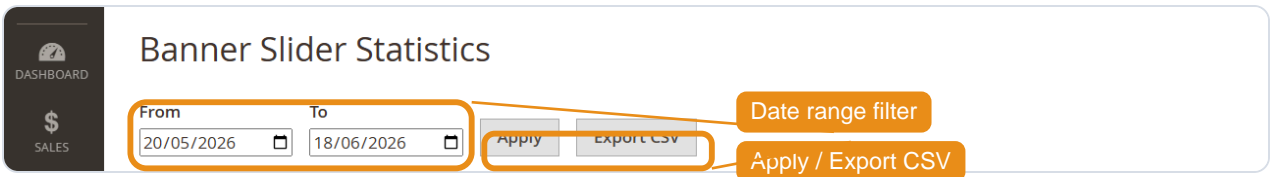


Figure 19 — Filtering and exporting analytics.

# 10 · Placing a Slider on the Storefront

A slider is displayed using the Magento **widget** system, so you can place it on any page or layout position without code.

## Using the widget

1. Go to **Content** → **Widgets** → **Add Widget**.
2. Choose type "**ETechFlow Banner Slider**" (or "**ETechFlow Banner Slider (Hyvä)**" on a Hyvä store) and your theme.
3. Set the **Storefront Properties** — where it appears (e.g. CMS Homepage Content, page top, sidebar) and on which pages.
4. In **Widget Options**, select the **slider** to display.
5. Save and flush cache.

You can also embed it directly in CMS content with a widget directive, or place it via layout XML for a specific block.

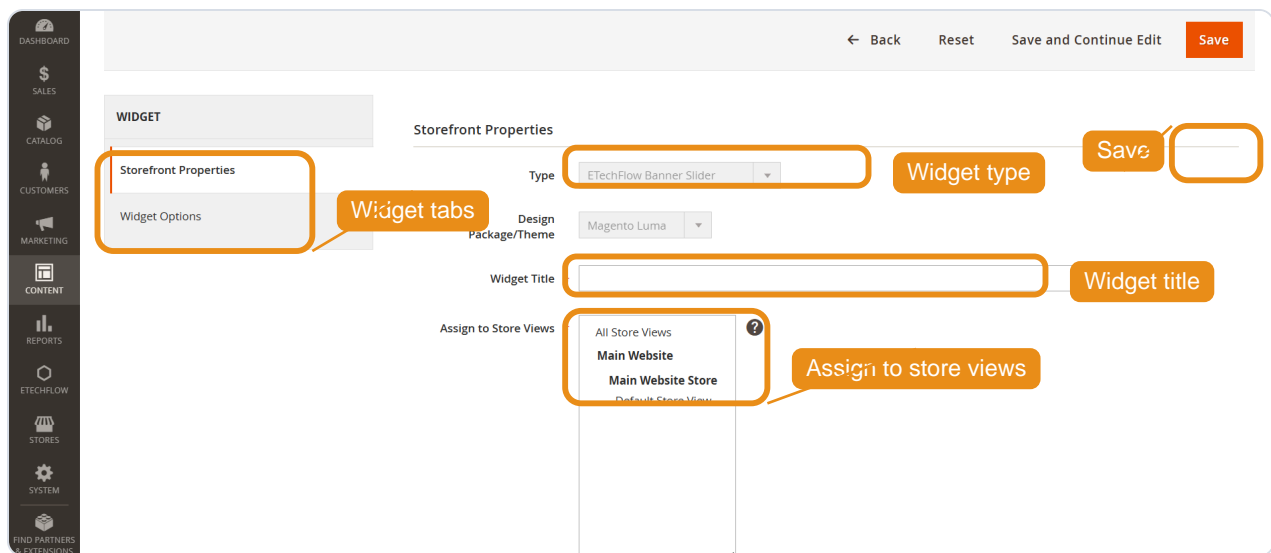


Figure 20 — Placing a slider via a widget.

# 11 · Hyvä Storefront Support

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On Hyvä themes the slider is rendered by the `ETechFlow_BannerSliderHyva` module using **Tailwind CSS + Alpine.js** — no jQuery, no RequireJS — for a fast, modern storefront. It reuses the exact same banners, sliders, targeting, A/B and tracking as Luma; only the rendering layer differs.

- Self-contained Alpine component; loads one small deferred script per page.
- Targeting context is fetched directly from the customer-data section endpoint (framework-agnostic).
- Same A/B and attribution cookies, same tracking endpoint — so analytics are unified across Luma and Hyvä.
- Compatible with **Hyvä Checkout**.

## Remember

Enable the Hyvä module manually via CLI on Hyvä stores only — see §3.2. It is not an admin setting and does not auto-activate.

## 12 · GraphQL & REST API

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### GraphQL (headless / PWA)

The `ETechFlow_BannerSliderGraphQL` module exposes a query and a mutation. Targeting and A/B selection are returned as data so the **client** performs them — keeping responses cacheable, mirroring the FPC-safe approach.

```
query {
  etechflowBannerSlider(slider_id: 1) {
    name
    is_ab_test
    banners {
      type
      image
      link
      video_type
      countdown_at_ms
      product_sku
      variant
      weight
      targeting # JSON - client evaluates
    }
  }
}
```

```
mutation {
  etechflowTrackBannerEvent(input: {
    banner_id: 5, slider_id: 1, event: "click"
  }) { success }
}
```

The query returns all active banners plus their rules; the mutation records impression / click / add-to-cart events (server-only `order` events are rejected).

### REST / Repository API

The core module provides repository-based REST endpoints for sliders and banners (create / read / update / delete), so sliders can be managed programmatically or from external systems.

## 13 · Licensing & Activation

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The module is activated with a license key issued by the ETechFlow license portal.

1. Purchase / obtain a key in the form `SP-XXXX...` .
2. Go to **Stores** → **Configuration** → **ETechFlow** → **Banner Slider** → **License**.
3. Paste the key and save. The module validates it live against `license-service.etechflow.com` and unlocks all features.

If the module is locked, an activation screen is shown in the admin with an **Enter License Key** option and a **Select Plan & Pay** checkout flow. After payment, keys are issued within a few seconds; the activation screen polls and, if needed, lets you paste the key once it appears in your portal account.

### Note

Validation is fail-closed and lightly cached. The key is tied to your store domain.

## 14 · Troubleshooting / FAQ

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### **The Hyvä slider doesn't show on my Hyvä store.**

Make sure you enabled the Hyvä module via CLI ( `module:enable ETechFlow_BannerSliderHyva` + `setup:upgrade` + `cache:flush` ) and that you placed the "ETechFlow Banner Slider (Hyvä)" widget (not the Luma one). It does not auto-activate from a theme or admin setting.

### **A targeted banner shows to everyone for a split second.**

Network-based dimensions (login, group, cart, country) apply once the customer-data section loads; a fail-open timeout reveals deferred banners if it's slow. Local dimensions (device, day, hour, UTM) are instant. Ensure caching is configured normally.

### **My uploaded banner image returns 404 on the storefront.**

Flush the cache after saving. Images are moved out of the temp folder on save; if you replaced files manually, re-save the banner.

### **A video plays for a second then the slide advances.**

Autoplay pauses while a video is playing and resumes when you navigate away — this is by design. If a slider's autoplay speed is 0 it falls back to 3500 ms.

### **Storefront JS looks stale after an update.**

Bump the static deployed version and flush cache so browsers refetch the script (especially on mobile).

### **Where do I see revenue per banner?**

**Content** → **Banner Slider** → **Statistics** — the per-banner table includes attributed revenue; export to CSV for deeper analysis.