

Module 1: System configuration

This toolkit is designed for Adobe Campaign Classic Developer Expert Exam Aspirants. There are six modules. Study each module per week to stick to schedule. Technical parts of applications are depicted in videos, about which you can learn more from Experience League. You can visit Get prep page to understand the contents and anticipate the learning journey.

This is Developer Expert Exam, toolkit Module 1. This module contains seven sections.

1.1 Campaign Classic v7 Documentation

What's New

- [March Release is live!](#)
Discover new capabilities, improvements, and fixes in the Release Notes
- [2022 Release Program](#)
Upgrade your environment and improve security, infrastructure, and performances
- [Update your Adobe Experience Cloud Triggers integration](#)
The legacy OAuth authentication service has reached end-of-life: you must migrate to Adobe I/O

[More updates](#)

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1.2 Get started with transactional messaging

Overview

Transactional messaging (Message Center) is a Campaign module designed for managing custom trigger notifications generated from events sent by an external information system.

A transactional message is an individual and unique communication, sent in real-time by a provider such as a website. It is particularly expected, because it contains important information that the recipient wants to check or confirm.

Transactional messaging capabilities are designed to support scalability and provide a 24/7 service.

- **When is it due?** Because this message contains important information, the user expects it to be sent in real time. Consequently, the delay between the event being triggered and the message arriving has to be very short.
- **Why is it important?** Generally, a transactional message has high open rates. It should therefore be carefully designed, because it can have a strong impact on the customers' behavior as it defines the client relation.
- **For example?** It could be a welcome message after creating an account, a confirmation that an order has shipped, an invoice, a message confirming a password change, a notification after a customer browsed your website, a product unavailability communication, an account statement, etc.

IMPORTANT

Transactional messaging requires a specific license. Please check your license agreement.

Transactional messaging operating principle

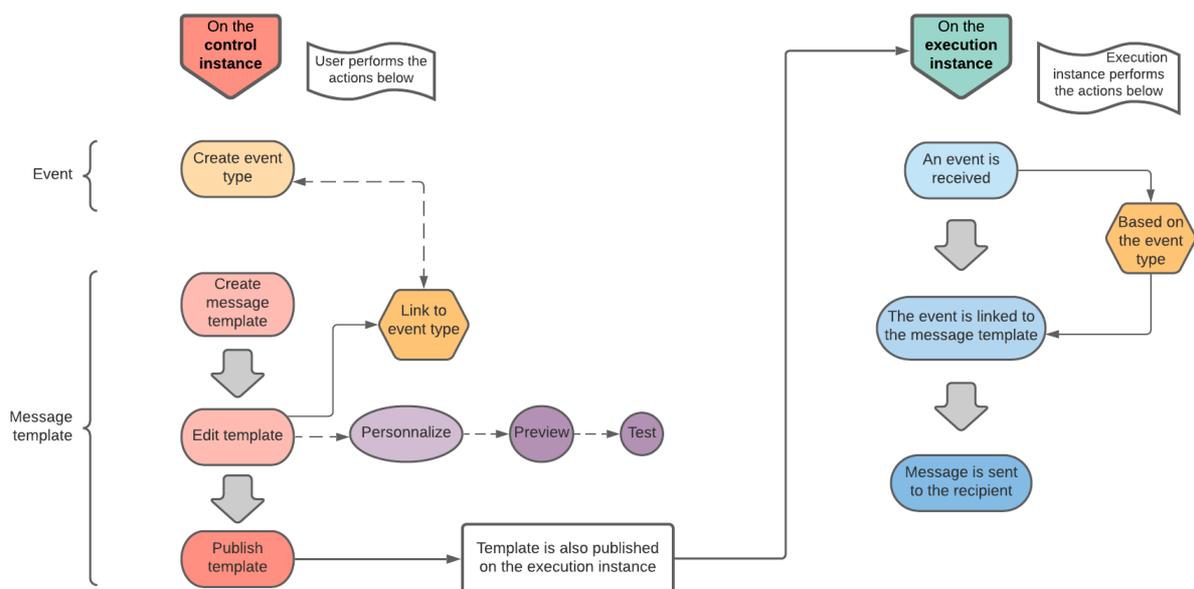
The Adobe Campaign Transactional messaging module integrates into an information system which returns events to be changed into personalized transactional messages. These messages can be sent individually or in batches via email, SMS or push notifications.

This feature relies on a specific architecture, where the **execution instance** is separated from the **control instance**. This distribution ensures higher availability and better load management. For more on this, see [Transactional messaging architecture](#).

NOTE

To create new users for Message Center execution instances hosted on Adobe Cloud, you need to contact [Adobe Customer Care](#). Message Center users are specific operators that require dedicated permissions to access **Real time events (nmsRtEvent)** folders.

The transactional messaging overall process can be described as follows:



For example, imagine you are a company with a website where your customers can buy products.

Adobe Campaign allows you to send a notification email to customers who have added products to their cart. When one of them leaves your website without going through with their purchases (external event which triggers a Campaign event), a cart abandonment email is automatically sent to them (transactional message delivery).

The main steps for putting this into place are detailed below in [this section](#).

NOTE

Adobe Campaign prioritizes processing transactional messages over any other delivery.

Key steps

The main steps when creating and managing personalized transactional messages in Adobe Campaign are summarized below.

Steps to perform on the control instance

On the **control instance**, you must perform the following actions:

1. [Create an event type](#).
2. [Create and design the message template](#). You must link an event to your message during this step.
3. [Test the message](#).
4. [Publish the message template](#).

NOTE

All the steps above are performed on the **control instance**. Publishing the template on the control instance will also publish it on all **execution instances**. For more on the transactional messaging instances, see [Transactional messaging architecture](#).

Event processing on the execution instance

Once you designed and published the transactional message template, if a corresponding event is triggered, the main steps below are performed on the **execution instance**:

1. When the event is generated by the external information system, the relevant data are sent to Campaign via the **PushEvent** and **PushEvents** methods. See [Event collection](#).
2. The event is linked to the appropriate message template. See [Routing towards a template](#).
3. Once the enrichment stage is complete, the delivery is sent. See [Delivery execution](#). Each targeted recipient receives a personalized message.

Related topics

- [Get started with communication channels](#)
- [Delivery creation key steps](#)
- [Transactional messaging architecture](#)
- [Access transactional messaging reports](#)

1.3 General architecture

The typical Adobe Campaign solution deployment consists of the following components:

- **Personalized Client Environment**

Intuitive graphical interface in which users can communicate and track marketing offers, create campaigns, review and manage all marketing activities, programs and plans - including emails, workflows and landing pages -, create and manage customer profiles, and define customer audience types.

- **Development Environment**

Server-side software that executes the marketing campaigns through chosen communication channels, including emails, SMS, push notifications, direct mail, web or social, based on the rules and workflows defined in the user interface.

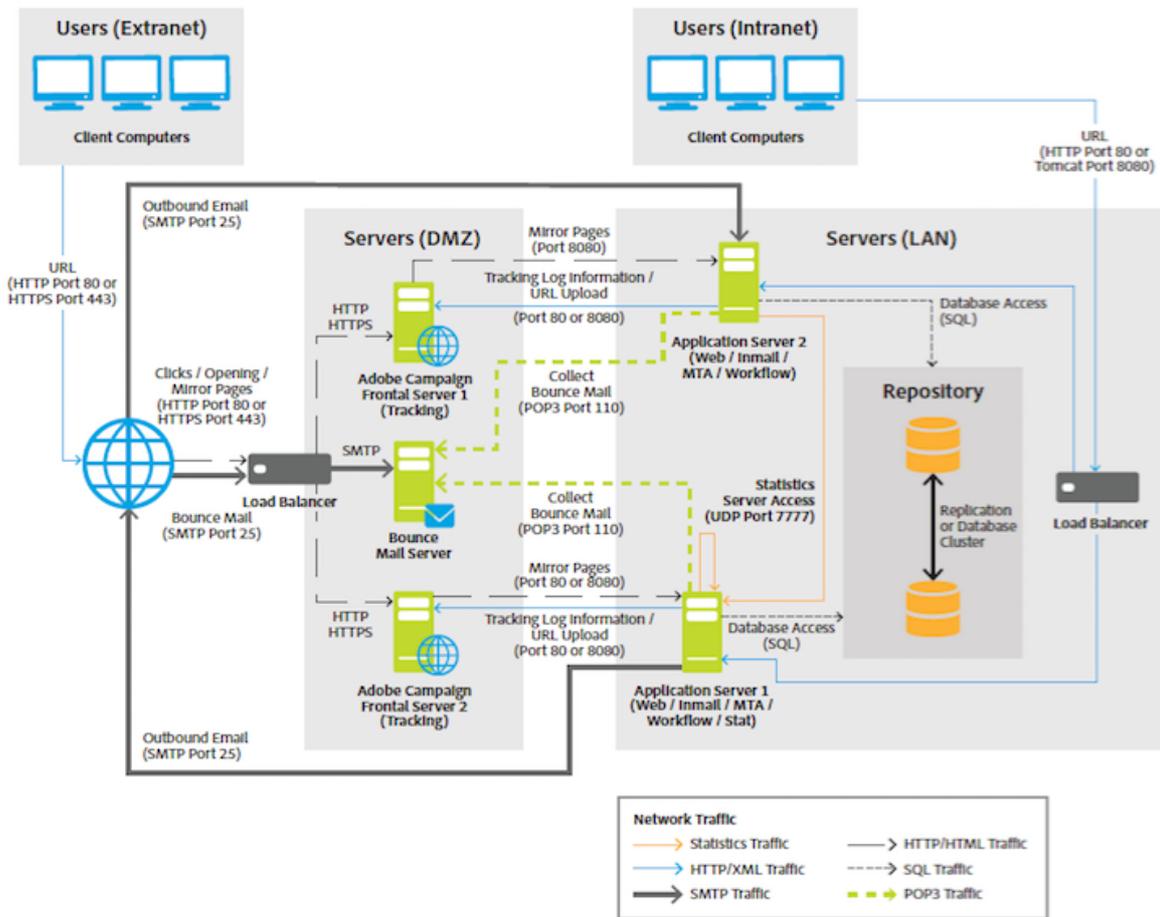
- **Database Containers**

Based on relational database technology, the Adobe Campaign database stores all customers information, campaign components, offers and workflows, as well as campaign results in customer database containers.

Adobe Campaign is based on a service-oriented architecture (SOA) and comprises several functional modules. These modules can be deployed on one or more computers, in single or multiple instances, depending on constraints in terms of scalability, availability and service isolation. The scope of deployment configurations is therefore very broad, and spans a single, central computer through to configurations including multiple dedicated servers over multiple sites.

NOTE

As a software vendor, we specify compatible hardware and software infrastructures. The hardware recommendations given here are for informational purposes only and are based on our experience. Adobe shall not be liable for any decisions made based on them. It will also depend on your business rules and practices and the criticality and required performance levels of the project.



CAUTION

If not explicitly stated otherwise, installation, updates and maintenance on all components of an Adobe Campaign platform are the responsibility of the machine administrator(s) hosting them. This includes implementing the prerequisites for Adobe Campaign applications as well as complying with Campaign [Compatibility matrix](#) between components.

Presentation layer

The application can be accessed in different ways, depending on the users' needs: Rich client, Thin client or API integration.

- **Rich client:** The main user interface of the application is a rich client, in other words, a native application (Windows) that communicates with the Adobe Campaign application server solely with standard internet protocols (SOAP, HTTP, etc.). This console provides great user-friendliness for productivity, uses very little bandwidth (through the use of a local cache) and is designed for easy deployment. This console can be deployed from an internet browser, can be updated automatically and does not require any specific network configuration because it only generates HTTP(S) traffic.
- **Thin client:** Certain parts of the application can be accessed via a simple web browser using an HTML user interface, including the reporting module, delivery

approval stages, functionalities of the Distributed Marketing module (central/local), instance monitoring, etc. This mode makes it possible to include Adobe Campaign functionalities in an intranet or an extranet.

- **Integration via the APIs:** In certain cases, the system can be called from external application using the Web Services APIs exposed via the SOAP protocol.

Logical application layer

Adobe Campaign is a single platform with different applications that combine to create an open and scalable architecture. The Adobe Campaign platform is written on a flexible application layer and is easily configurable to meet a company's business needs. This accommodates the growing needs of the enterprise from a functional perspective as well as from a technical perspective. The distributed architecture ensures linear system scalability scaling from thousands of messages to millions of messages.

Adobe Campaign relies on a set of server-side processes that work together.

The main processes are:

Application server (nlserver web)

This process exposes the full range of Adobe Campaign functionality via Web Services APIs (SOAP - HTTP + XML). Furthermore, it can dynamically generate the Web pages used for HTML-based access (reports, Web forms, etc). To achieve this, this process includes an Apache Tomcat JSP server. This is the process to which the console connects.

Workflow engine (nlserver wfserver)

It executes the workflow processes defined in the application.

It also handles periodically executed technical workflows, including:

- **Tracking:** Recovering and consolidating tracking logs. It enables you retrieve the logs from the redirection server and create the aggregate indicators used by the reporting module.
- **Cleanup:** Database cleaning. Used to purge old records and avoid the database growing exponentially.
- **Billing:** Automatic sending of an activity report for the platform (database size, number of marketing actions, number of active profiles etc.).

Delivery Server (nlserver mta)

Adobe Campaign has native email broadcast functionality. This process functions as an SMTP mail transfer agent (MTA). It performs "one-to-one" personalization of messages and handles their physical delivery. It functions using delivery jobs and handles automatic retries. In addition, when tracking is enabled, it automatically replaces the URLs so that they point to the redirection server.

This process can handle the customization and automatic sending to a third-party router for SMS, fax and direct mail.

Redirection server (nlserver webmdl)

For email, Adobe Campaign automatically handles open and click tracking (transactional tracking at the Web site level is a further possibility). To achieve this, the URLs incorporated in the email messages are rewritten in order to point to this module, which registers the passing of the internet user before redirecting them to the required URL.

To guarantee highest availability, this process is fully independent from the database: the other server processes communicate with it using SOAP calls (HTTP, HTTP(S) and XML) only. Technically, this functionality is implemented in an extension module of a HTTP server (ISAPI extension in IIS, or a DSO Apache module, etc.) and is available in Windows only.

Other more technical processes are also available:

Managing bounce emails (nlserver inMail)

This process enables you to automatically pick up email from mailboxes configured to receive bounced messages that are returned in case of delivery failure. These messages then undergo rule-based processing to determine the reasons for non-delivery (unknown recipient, quota exceeded, etc.) and to update the delivery status in the database.

All these operations are fully automatic and preconfigured.

SMS delivery status (nlserver sms)

This process polls the SMS router to collect progress status and update the database.

Writing log messages (nlserver syslogd)

This technical process captures log messages and traces generated by the other processes and writes them to the hard disk. This makes ample information available for diagnosis in case of problems.

Writing tracking logs (nlserver trackinglogd)

This process saves to disk the tracking logs generated by the redirecting process.

Writing inbound events (nlserver interactiond)

This process ensures the recording to the disk of inbound events, within the framework of Interaction.

Supervising modules (nlserver watchdog)

This technical process acts as a primary process which spawns the others. It also monitors them and relaunches them automatically in case of incidents, thus maintaining maximum system uptime.

Statistics server (nlserver stat)

This process maintains statistics on the number of connections, the messages sent for each mail server which messages are sent to, as well as their limitations (highest number of simultaneous connections, messages per hour/ and or connection). It also lets you federate several instances or machines if they share the same public IP addresses.

NOTE

The complete list of Adobe Campaign modules is available in [this document](#).

Persistence layer

The database is used as a persistence layer and contains almost all the information managed by Adobe Campaign. This includes both functional data (profiles, subscriptions, content, etc.), technical data (delivery jobs and logs, tracking logs, etc.) and work data (purchases, leads).

The reliability of the database is of utmost importance because the majority of Adobe Campaign components require access to the database in order to perform their tasks (with the notable exception of the redirection module).

The platform comes predefined with a marketing centered data mart or can easily sit atop an existing data mart and schema using any of the major Relational Database Management Systems (RDBMS). All data within the data mart is accessed by the Adobe Campaign platform via SQL calls from Adobe Campaign to the database. Adobe Campaign also provides a full complement of Extract Transform and Load (ETL) tools to perform data import and export of data into and out of the system.

1.4 Get started with Adobe Campaign integrations

Adobe Experience Cloud is a comprehensive set of best-in-class, integrated solutions built on a common data platform with a common set of powerful core services.

Learn about functional integrations available between Adobe Campaign and [Adobe Experience Cloud solutions](#) and [core services](#). You can then modernize your solution implementations and implement the Experience Cloud so that you can use features like customer attributes and audiences.



The full list of Adobe solutions and core services which can be integrated with Adobe Campaign, as well as associated documentation, is available in [this section](#).

CAUTION

Most of these integrations require to implement Adobe Identity Management System (IMS), to log in via an Adobe ID. [Learn more in this page](#).

Linking your solutions

Multiple solutions can be linked to Adobe Experience Cloud. The **organization** is the customer entity that enables an administrator to configure groups and users, and to control single sign-on (SSO) in Adobe Experience Cloud. The organization acts like a log-in company that spans all the Experience Cloud products and solutions. Most often, an organization is your company name. However, a company can have many organizations.

Organization management and linking Adobe Experience Cloud accounts are detailed in the [Adobe Experience Cloud help portal](#).

Identity and cookie management

When installing Adobe Campaign or integrating an existing installation with Adobe Experience Cloud, the [Adobe Experience Cloud Identity Service](#) is enabled. This service

replaces the permanent cookie used first and foremost by Adobe Campaign for its tracking functionalities.

The Adobe Experience Cloud Identity Service (ID service) provides a universal, persistent ID that identifies your visitors across all the solutions in the Experience Cloud.

A unique visitor ID will be assigned to recipients generating tracking logs. This ID will be saved in the **Requester UUID (@sourceID)** field of the **nms:trackingLogRcp** table. **The tracking data of recipients who existed before the visitor ID service was implemented will therefore no longer be usable.**

The ID will then be recognized by the other Adobe Experience Cloud solutions with the same CNAME. [Learn more](#)

Experience Cloud integrations

The following table provides access to available Experience Cloud integration documentation.

Solution & Core services	Use cases
Adobe Real-time Customer Data Platform (RTCDP)	The integration between Adobe Campaign and Adobe Real-time Customer Data Platform (RTCDP) allows you to share segments data and import audiences to Adobe Campaign. Learn more about Campaign - Adobe Real-time Customer Data Platform integration.
Adobe Identity Management System (IMS) - Adobe ID	Allows you to connect to Adobe Campaign with the same Adobe ID as for the other Adobe Experience Cloud solutions. An Adobe ID has to be used to log in in order to use certain functionalities linked to the Adobe Experience Cloud integrations, particularly Core Services. Learn more about implementing Adobe ID with Adobe Campaign.
Adobe Experience Manager	Allows you to create email contents or forms mapped to the Adobe Campaign database directly in Adobe Experience Manager . Learn more about Adobe Campaign - Adobe Experience Manager integration.
Adobe Target	Allows you to insert images that are dynamically computed by Adobe Target when the email created and sent by Adobe Campaign is opened. Learn more about Adobe Campaign - Adobe Target integration.
People core service Adobe Audience Manager	Allows you to share audiences between the Adobe Experience Cloud solutions and core that you use. Learn more about Adobe Campaign - People core service and Adobe Audience Manager integrations.
Assets core service	Allows you to insert assets from your Adobe Experience Cloud library into emails and landing pages created in Adobe Campaign. Learn more about Adobe Campaign - Assets core service integration

AEM Assets	Allows you to insert assets from your AEM Assets library into emails and landing pages created in Adobe Campaign. Learn more about Adobe Campaign - AEM Assets integration.
Experience Cloud Triggers	Integration between Triggers core service and Adobe Campaign allows you to send personalized emails to your customers as a reaction to specific behaviors that are tracked on your website by Adobe Analytics. Learn more about Adobe Campaign - Experience Cloud triggers integration.
Adobe Analytics Connector	Adobe Analytics Connector allows Adobe Campaign and Adobe Analytics interact through segments concerning user behavior following an email campaign. Conversely, it sends indicators and attributes of email campaigns delivered by Adobe Campaign to Adobe Analytics. Learn more about Campaign - Analytics Connectors integration.

1.5 Design and execute marketing campaigns

Adobe Campaign lets you define, optimize, execute and analyze communications and marketing campaigns. Adobe Campaign acts like a unified order and execution center for marketing strategies. For more on this, refer to [Access campaigns](#) and [Create marketing campaigns](#).

In addition, the **Marketing Resource Management (MRM)** module lets you control marketing actions in a collaborative mode by providing complete management and real-time tracking of the tasks, budgets and marketing resources involved. The Marketing Resource Management lets you optimize and regulate the management of internal and external processes, resources and marketing campaigns, as well as third party relations (agencies, printers, etc.). For more on this, refer to [this section](#).

NOTE

For more on the Adobe Campaign core functionalities, refer to [this section](#) section. Capabilities related to population targeting, message personalization and message delivery on the various channels are detailed in [this section](#).



[Discover marketing campaigns keys concepts in video](#)

Core concepts

The following concepts need to be known in the context of Campaign:

- **Campaign**

A campaign centralizes all the elements related to a marketing campaign: deliveries, targeting rules, costs, export files, related documents, etc. Each campaign is attached to a program.

For more on this, refer to [Adding a campaign](#).

- **Program**

A program lets you define marketing actions for a calendar period: launch, canvassing, loyalty, etc. Each program contains campaigns linked to a calendar, which provides an overall view.

- **Plan**

The marketing plan can contain multiple programs. It is linked to a calendar period, has an allocated budget and can also be linked up to documents and objectives.

For more on this, refer to [Campaign calendar](#).

- **Workflow**

A campaign workflow contains the same activities as for all workflows but is specific to the campaign. It enables you to create and configure deliveries for all available channels.

For more on this, refer to [this section](#).

- **Objectives**

Within the campaign, program or plan, you can state a list of objectives. These are quantified values to be reached. At the end of the campaign, program or plan, the MRM module lets you compare the objectives and results in dedicated reports.

- **Delivery outline**

A delivery outline is a structured description of a delivery. Every delivery can refer to a delivery outline which contains, for example, the related offers, documents to be attached, or a link to stores. An offer can be referenced in the delivery according to the delivery outline selected.

For more on this, refer to [this section](#).

Tutorial

This video presents the key concepts of marketing campaigns:

<https://experienceleague.adobe.com/docs/campaign-classic/using/orchestrating-campaigns/about-marketing-campaigns/designing-marketing-campaigns.html?lang=en#video>

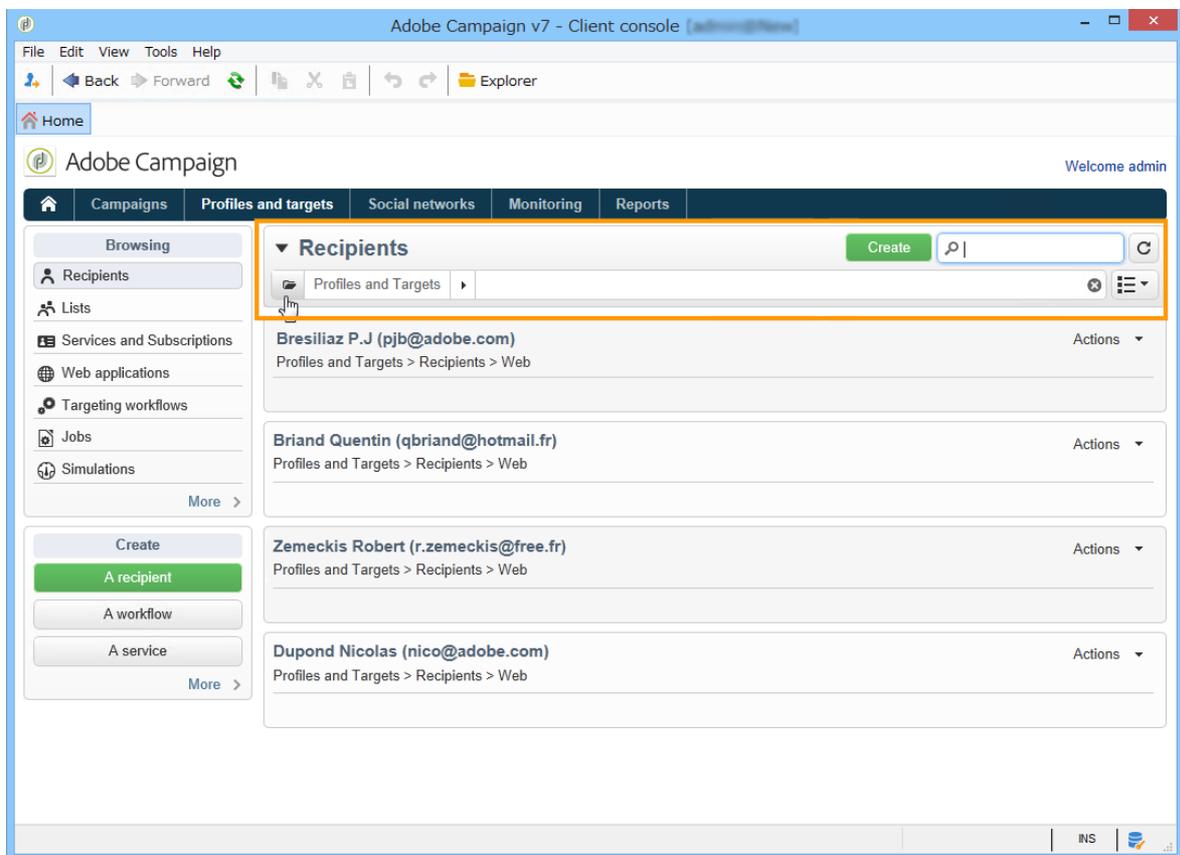
Additional Campaign Classic how-to videos are available [here](#).

1.6 Filtering options

About filtering

By default, Adobe Campaign displays all the data in the database for which the concerned operator has read rights.

This data can be filtered via the options located in the upper section of the browser window.

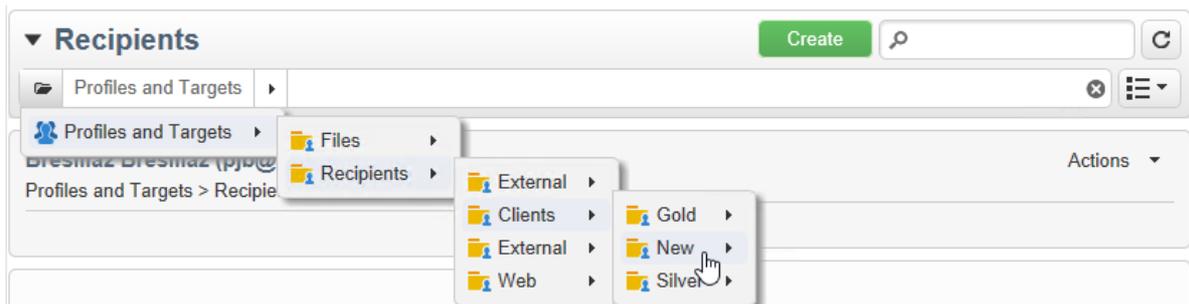


There are several ways of filtering the data to be displayed. If necessary, these can be used together:

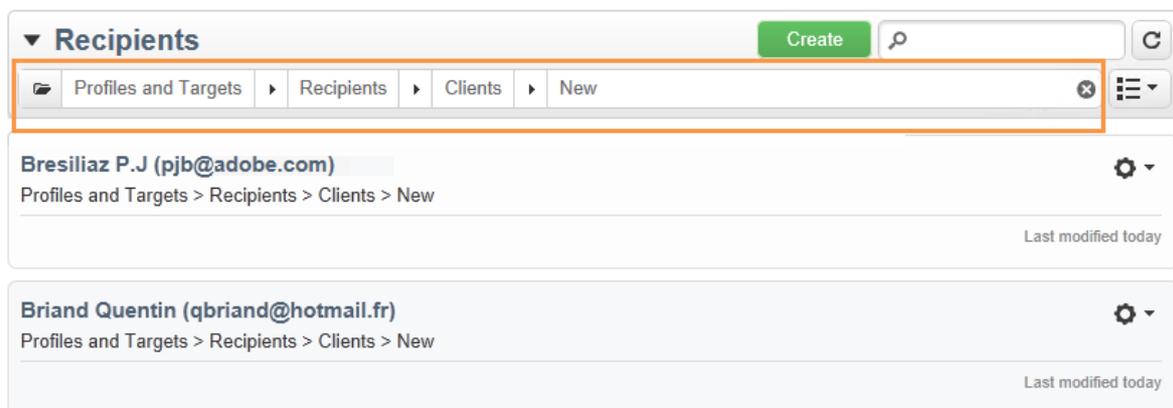
- Filter on folders, refer to [Filter by folder](#),
- Filter by status, refer to [Filter by status](#),
- Data sorting, refer to [Order by](#),
- Search, refer to [Quick search](#).

Filter by folder

Click the **Folder** icon to select the folder containing the data to display.



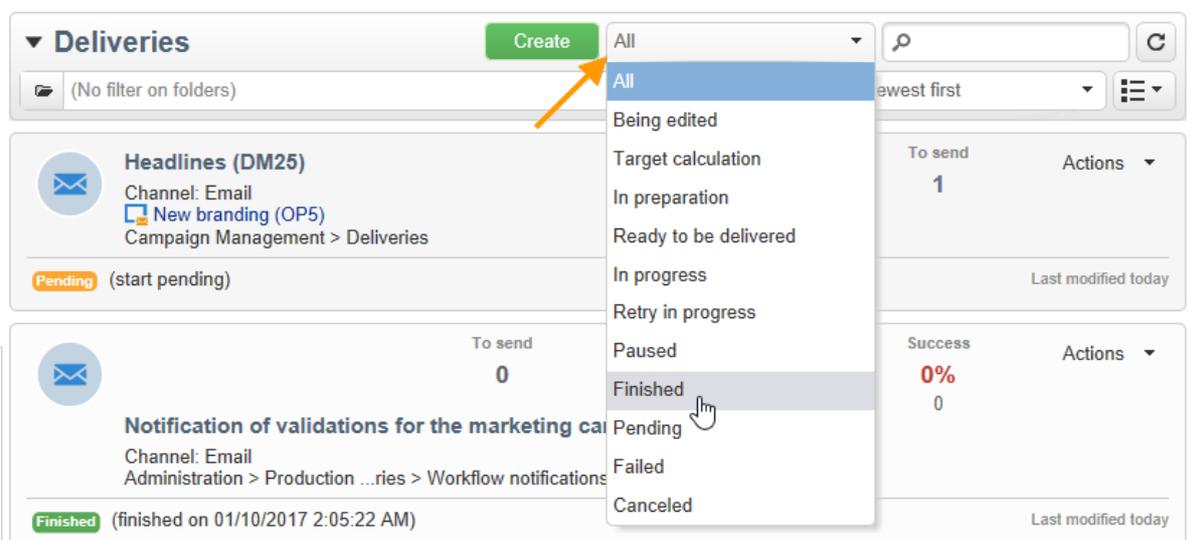
Only the profiles in the folder will be displayed:



Use the cross to the right of the folder selection field to return to the default display mode.

Filter by status

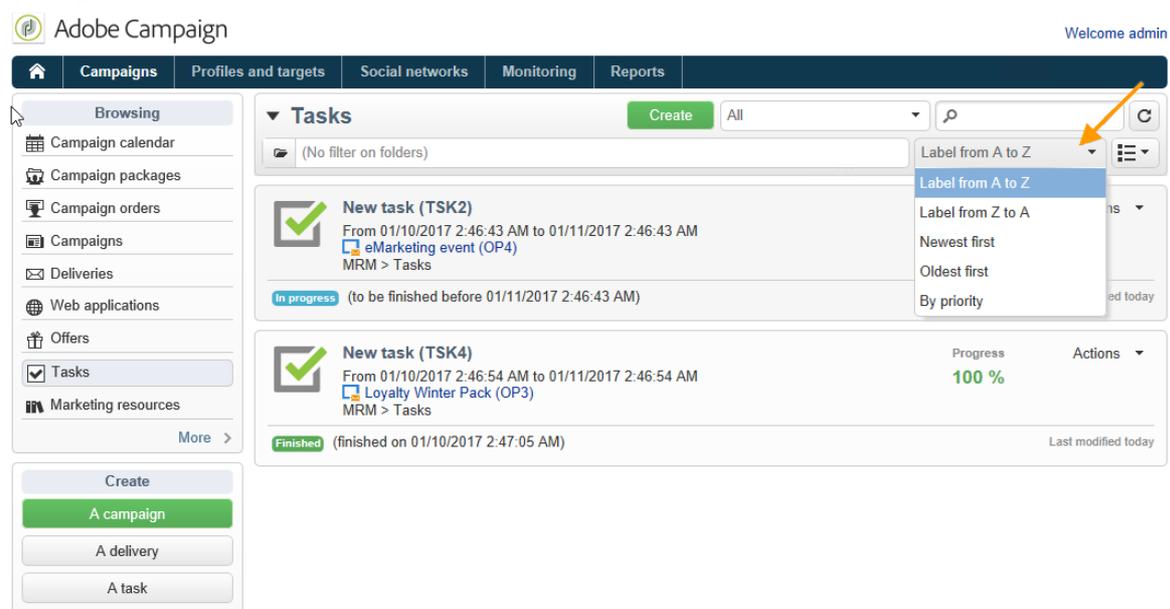
Depending on the type of information displayed, you can apply a filter by status or by state. For instance for deliveries, you can choose to display only finished deliveries as shown below:



Order by

You can select the sorting order of the data offered on pages via the drop-down list to the right of the 'per folder' filtering field. The content of this field depends on the type of data on the page.

For instance, you can sort tasks by priority, creation date, or alphabetical order.



The screenshot displays the Adobe Campaign user interface. At the top, there is a navigation bar with tabs for 'Campaigns', 'Profiles and targets', 'Social networks', 'Monitoring', and 'Reports'. The 'Campaigns' tab is active. On the left side, there is a 'Browsing' sidebar with a list of items: Campaign calendar, Campaign packages, Campaign orders, Campaigns, Deliveries, Web applications, Offers, Tasks (which is selected), and Marketing resources. Below this sidebar are three buttons: 'Create', 'A campaign', 'A delivery', and 'A task'. The main content area is titled 'Tasks' and features a search bar, a 'Create' button, and a dropdown menu currently set to 'All'. An orange arrow points to a sorting dropdown menu that is open, showing options: 'Label from A to Z', 'Label from Z to A', 'Newest first', 'Oldest first', and 'By priority'. Below the sorting menu, two task entries are visible. The first is 'New task (TSK2)' with a green checkmark, showing a time range from 01/10/2017 2:46:43 AM to 01/11/2017 2:46:43 AM, associated with 'eMarketing event (OP4)' and 'MRM > Tasks'. It is marked as 'In progress' with a note '(to be finished before 01/11/2017 2:46:43 AM)'. The second is 'New task (TSK4)' with a green checkmark, showing a time range from 01/10/2017 2:46:54 AM to 01/11/2017 2:46:54 AM, associated with 'Loyalty Winter Pack (OP3)' and 'MRM > Tasks'. It is marked as 'Finished' with a note '(finished on 01/10/2017 2:47:05 AM)'. To the right of the second task, there is a 'Progress' indicator at '100%' and an 'Actions' dropdown menu. The top right corner of the interface says 'Welcome admin'.

Quick search

Use the search field to quickly access the item you are looking for: enter the characters included in the label or internal name of the item you want to display, then confirm to apply an automatic filter to the data on the page.

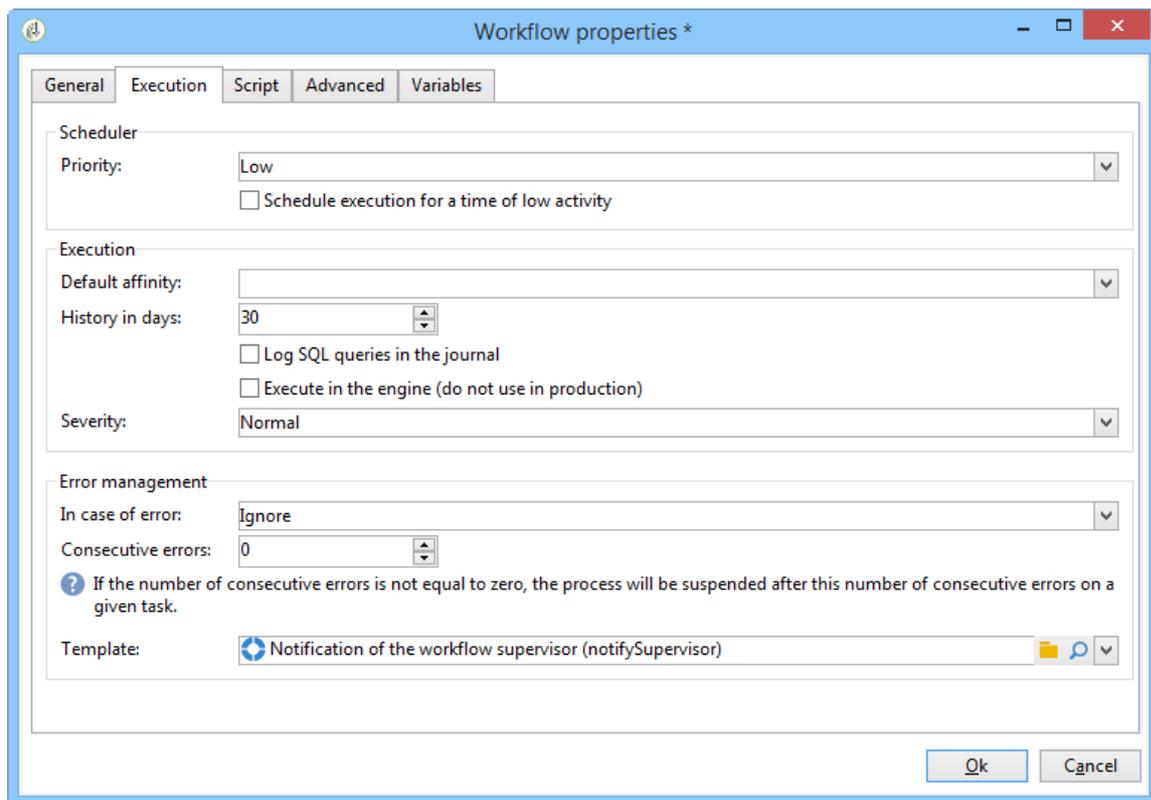
Deliveries			
<input type="button" value="Create"/> All <input type="text" value="news"/> <input type="button" value="X"/> <input type="button" value="C"/>		(No filter on folders) Newest first	
[Proof 2] Newsletter (FCP_46540_DM29) Channel: Email Campaign Management > Deliveries	Targeted 1	To send 1	Actions ▾
Pending (ready for delivery)		Last modified today	
Newsletter (DM29) Channel: Email Campaign Management > Deliveries	Targeted 2	To send 1	Actions ▾
Pending (ready for delivery)		Last modified today	
[Proof 1] Newsletter (FCP_46480_DM29) Channel: Email Campaign Management > Deliveries	Targeted 1	To send 1	Actions ▾
Pending (ready for delivery)		Last modified today	
Monthly News (DM28) Channel: Email Campaign Management > Deliveries	Targeted 1	To send 1	Actions ▾
Pending (ready for delivery)		Last modified today	

To display all items again, click on the cross to delete the content of the search field.

1.7 Workflow properties

Execution tab

The Execution tab of the Properties window in a workflow is broken down into 3 sections:



Scheduler

This section is only displayed in campaign workflows.

- **Priority**

The workflow engine processes the workflows to be executed based on the priority criterion defined in this field. For instance, all workflows with an **Average** priority will be executed before those with a **Low** priority.

- **Schedule execution for a time of low activity**

This option postpones workflow start to a less busy period. Some workflows can be costly in terms of resources for the database engine. We recommend scheduling execution for a time of low activity (at night for instance). Low activity periods are defined in the **Processes on campaigns** technical workflow.

Execution

- **Default affinity**

If your installation includes several workflow servers, use this field to choose the machine which the workflow will be executed on. If the value defined in this field doesn't exist on any server, the workflow will remain pending.

Refer to this [Campaign Classic v7 installation guide](#).

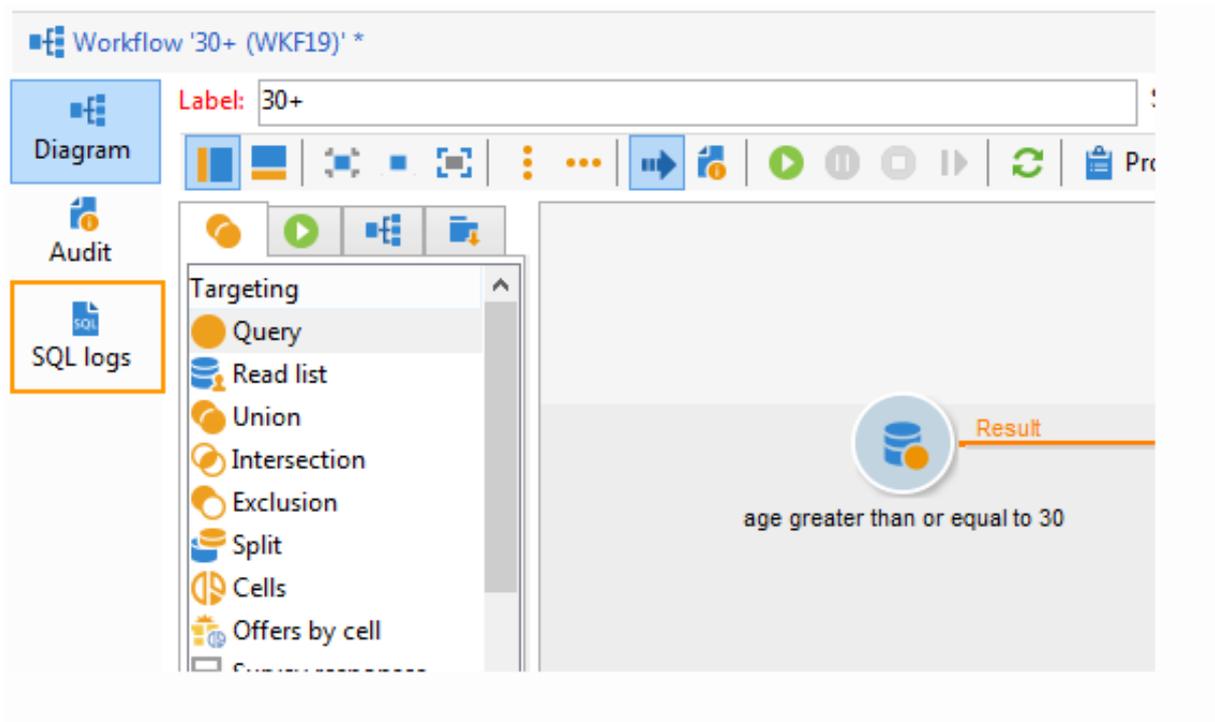
- **History in days**

The work tables of the database keep a history of executions (tasks, events, log). Here you can define the number of days to be archived for this workflow: the cleanup process will delete the oldest archives once a day. If the value in this field is zero, the archive will never be deleted.

- **Log SQL queries in the journal**

This functionality is reserved for advanced users. It concerns workflows that contain targeting activities (query, union, intersection, etc.). When this option is checked, the SQL queries sent to the database during workflow execution are displayed in Adobe Campaign: this means you can analyze them to optimize queries or diagnose issues.

Queries are displayed in an **SQL logs** tab which is added to the workflow (except campaign workflows) and to the **Properties** activity when the option is enabled. The **Audit** tab also includes SQL queries.



- **Execute in the engine**

This option may only be used for de-bugging and never in production. When it is enabled, the workflow takes priority and all other workflows are stopped until this one is finished.

Error management

- **Troubleshooting**

This field lets you define the actions to be taken if a workflow task has errors. There are two possible options:

- **Stop the process:** the workflow is automatically paused. the workflow status changes to **Failed**. Once the issue is solved, restart the workflow using the **Start** or **Restart** buttons.
- **Ignore:** the status of the task that triggered the error changes to **Failed**, but the workflow keeps the **Started** status. This configuration is relevant for recurring tasks: if the branch includes a scheduler, it will start normally next time the workflow is executed.

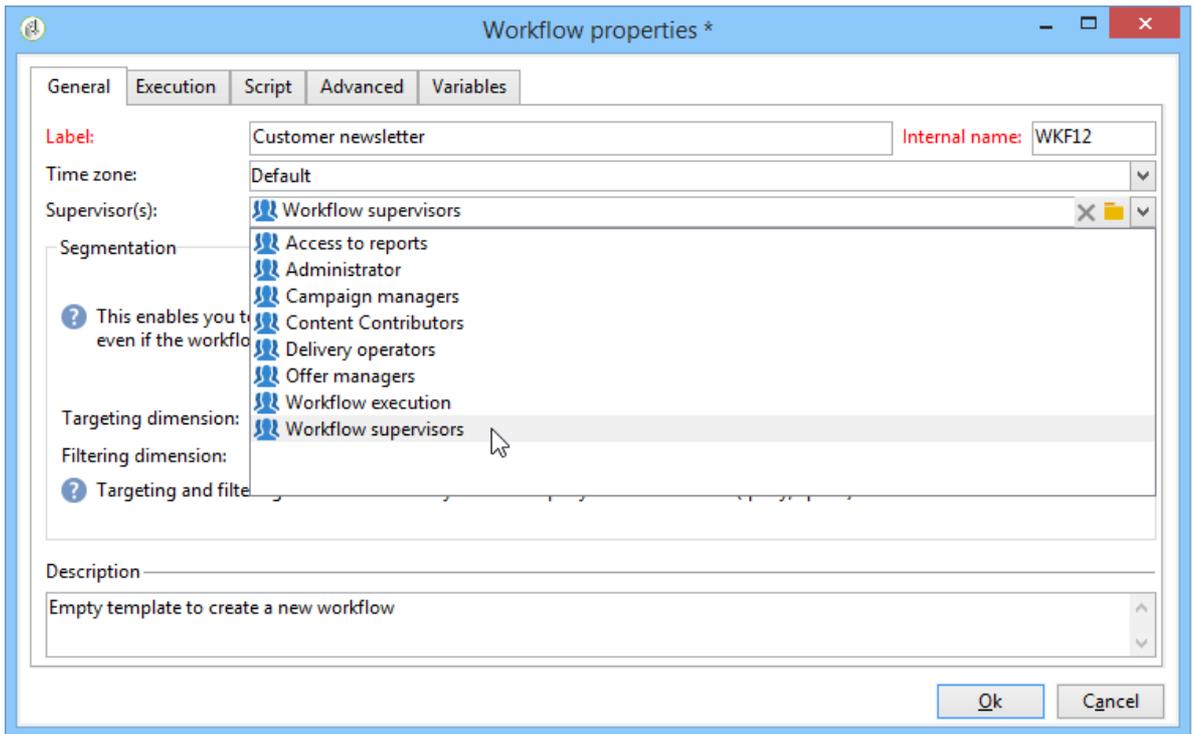
- **Consecutive errors**

This field becomes available when the **ignore** value is selected in the **In case of errors** field. You can specify the number of errors that can be ignored before the process is stopped. Once this number is reached, the workflow status changes to **Failed**. If the value of this field is 0, the workflow will never be stopped regardless of the number of errors.

- **Template**

This field lets you select the notification template to be sent to the workflow supervisors when its status changes to **Failed**.

The concerned operators will be notified by email, if there is an email address in their profile. To define workflow supervisors, go to the **Supervisor(s)** field of the properties (**General** tab).



The **Notification to a workflow supervisor** default template includes a link for accessing the Adobe Campaign console via the Web so that the recipient can work on the issue once they are logged on.

To create a personalized template, go to **Administration>Campaign management>Technical deliveries and templates**.