TYPO3 v9 LTS – What's New

The most important
new features, changes and improvements in 66 slides

01/October/2018

TYPO3

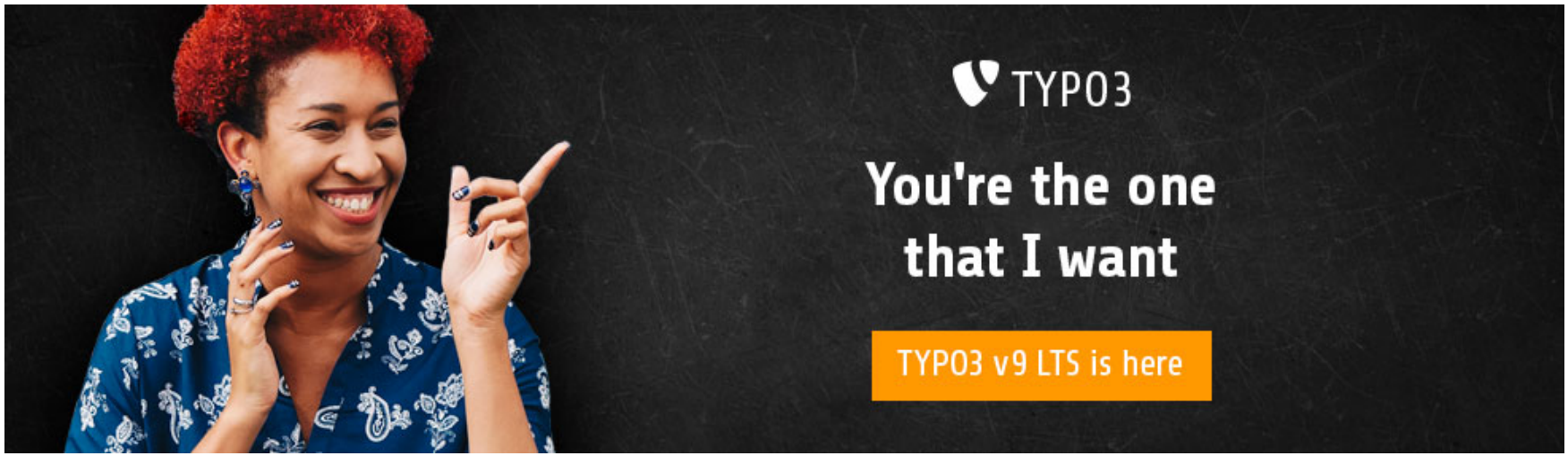
Introduction

Key facts and figures

Introduction

TYPO3 v9 LTS

- Release date: 2 October 2018
- Release type: LTS release (Long Term Release)
- Development time: 18 months



Introduction

System Requirements

- PHP version 7.2+
- Required PHP settings:
  - `memory_limit` >= 256M
  - `max_execution_time` >= 240s
  - `max_input_vars` >= 1500
  - compilation option `--disable-ipv6` must not be used
- Required PHP extensions:
  filter, hash, openssl, pcre >= 8.38, session, SPL, standard, xml, zip and zlib

Introduction

System Requirements

- Webserver such as Apache, Nginx, IIS, etc.
- All databases supported by **Doctrine DBAL** are also supported by TYPO3. For example:

- Minimum disk space required: 200 MB
- The backend requires Microsoft Internet Explorer 11 or later, Microsoft Edge, Google Chrome, Firefox, Safari or any other modern, compatible browser

Introduction

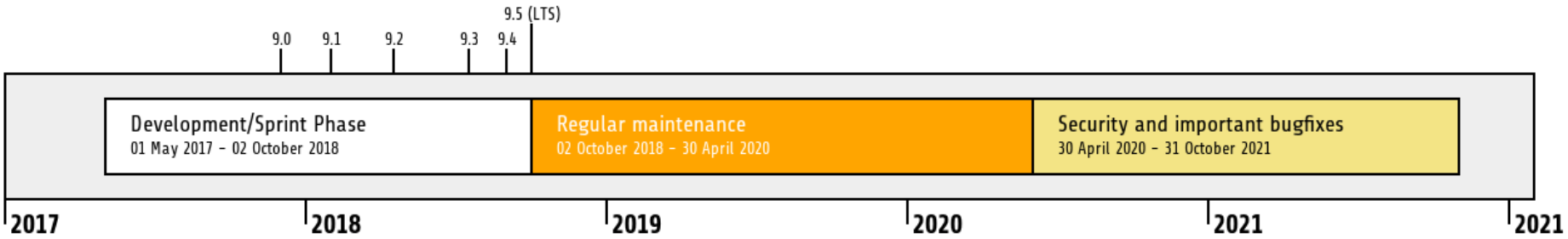
Development Timeline

Sprint Releases published:

- v9.0 12/Dec/2017 Install Tool and Page Tree Refactoring, Unified Page Translations
- v9.1 30/Jan/2018 Redirect Handling
- v9.2 10/Apr/2018 Site Handling
- v9.3 12/Jun/2018 SEO and URL Routing Preparations
- v9.4 04/Sep/2018 URL Routing for Pages
- v9.5 02/Oct/2018 LTS Preparation and Release

Introduction

Long Term Support



- TYPO3 version 9.5 is a LTS release (Long Term Support)
- Regular maintenance and bugfixes until March 2020
- Security and critical bugfixes until October 2021

Extended Support

TYPO3 GmbH offers Extended Long Term Support (ELTS) for TYPO3 v9 LTS until October 2024.

Page-based URL Handling

Speaking URLs "out of the box"

Page-based URL Handling

URL Segment

- New field "URL Segment" has been added to page properties
- All links generated in the backend and frontend use this field, if set
- Languages are taken into account automatically
- No need for third-party extensions to generate "speaking URLs"

Page-based URL Handling

New TCA Field Type `slug`

- New TCA field type `slug` has been added
- Define parts of a URL path to generate and resolve URLs

```
'type' => 'slug',
  'config' => [
    'generatorOptions' => [
      'fields' => ['title', 'nav_title'],
      'fieldSeparator' => '/',
      'prefixParentPageSlug' => true
    ]
    'fallbackCharacter' => '-',
    'eval' => 'uniqueInSite'
  ]
```

Page-based URL Handling

Routing Enhancers and Aspects

- Routes can be extended by "placeholders" to create URL paths such as:

  `/path-to/my-page/products/{product-name}`
- This is done by "Enhancers" and "Aspects"
- TYPO3 v9 LTS supports the following enhancers out of the box:
  - Simple Enhancer (enhancer type "Simple")
  - Plugin Enhancer (enhancer type "Plugin")
  - Extbase Plugin Enhancer (enhancer type "Extbase")
- Configuration in file `config.yml` (no UI yet)
- Custom enhancers can be registered in `ext_localconf.php`:

```
$GLOBALS['TYPO3_CONF_VARS']['SYS']['routing']['CustomPlugin'] =
  \MyVendor\MyPackage\Routing\CustomEnhancer::class;
```


TYPO3

Page-based URL Handling

Page Type Enhancer

- The `PageTypeEnhancer` lets you configure pages by type, e.g. ones with the suffix `.html`
- The suffix gets added at the very end of a URL by using the `StaticValueMapper`
- Configuration example:

```
routeEnhancers:
  PageType:
    type: PageType default: ''
        map:
          '.html': 1
          'menu.json': 13
```

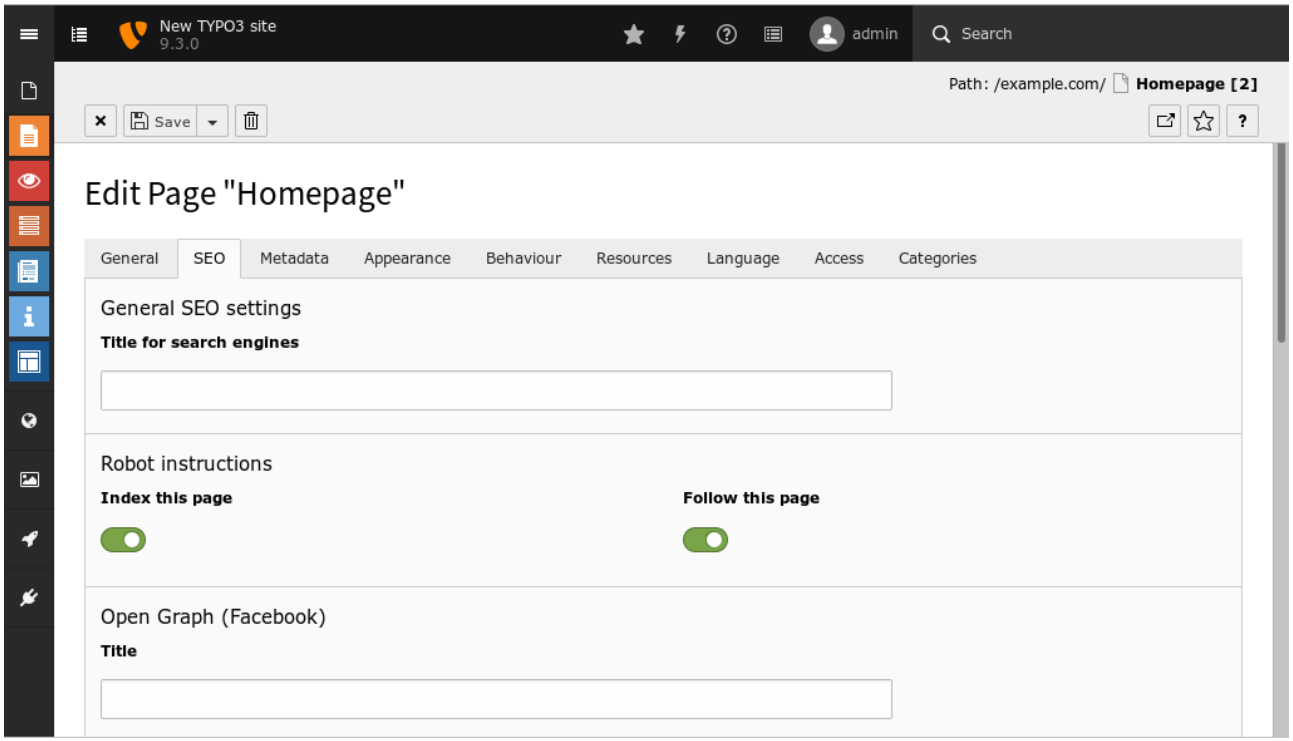
Search Engine Optimization

Now we can "SEO" you

Search Engine Optimization

Search Engine Optimization

Page properties feature a new "SEO" tab, which allows BE users to configure SEO-related information, Open Graph data and much more.



Search Engine Optimization

Search Engine Optimization (SEO)

- New Page Title API allows integrators and developers to influence what exactly is shown as the page title
- TYPO3 can generate XML Sitemaps now, with the capability to render different sitemaps per site and language
- Canonical links to pages are automatically added to prevent ranking penalties due to duplicate content for example
- In multi-language TYPO3 sites, `hreflang`-tags are added automatically
- SEO-related meta tags set in the page properties are now rendered in the frontend by default

Search Engine Optimization

Meta Tag Manager

- New Meta Tag API has been introduced to manage and render meta tags in a simple and flexible way
- TYPO3 core ships an Open Graph Meta Tag Manager, for example:

```
use \TYPO3\CMS\Core\MetaTag\MetaTagManagerRegistry;
$metaTagManager = MetaTagManagerRegistry::getInstance()->getManagerForProperty('og:title');
$metaTagManager->addProperty('og:title', 'This is the OG title from a controller');
```

- Functions available include:
  - `$metaTagManager->addProperty()`
  - `$metaTagManager->removeProperty()`
  - `$metaTagManager->removeAllProperties()`

Search Engine Optimization

Meta Tag Manager

- Developers can register custom `MetaTagManager` in the `MetaTagManagerRegistry`

```
use \TYPO3\CMS\Core\MetaTag\MetaTagManagerRegistry;
$metaTagManagerRegistry = MetaTagManagerRegistry::getInstance();
$metaTagManagerRegistry->registerManager(
  'custom',
  \Some\CustomExtension\MetaTag\CustomMetaTagManager::class
);
```

- Meta tags can be set by TypoScript and PHP

```
page.meta {
  og:site_name = TYPO3
  og:site_name.attribute = property
  og:site_name.replace = 1
}
```

("`replace = 1`" replaces earlier set meta tags)

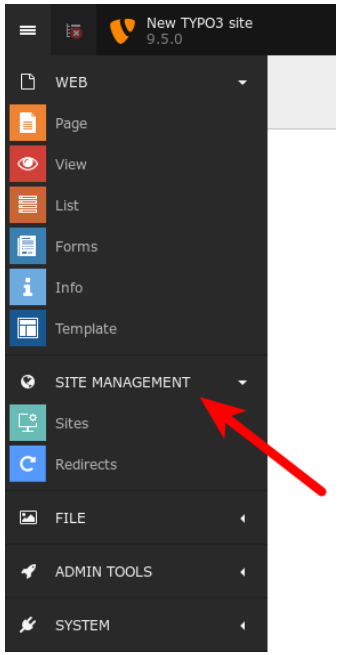
Site Management

Have everything under control and in one central place

Site Management

Site Management

A new main module **Site Management** has been introduced. Configurations are stored in a YAML file under `typo3conf/sites/`



The first two default components are:

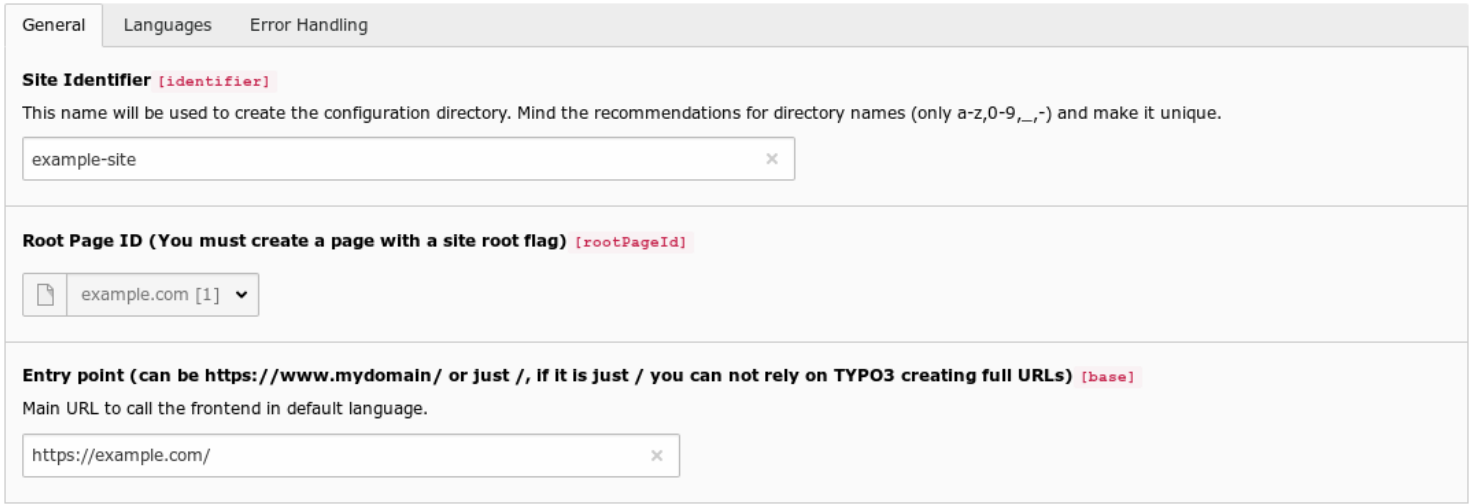
- Sites
- Redirects

Extensions can add further sub-modules as required.

Site Management

Site Management → Sites

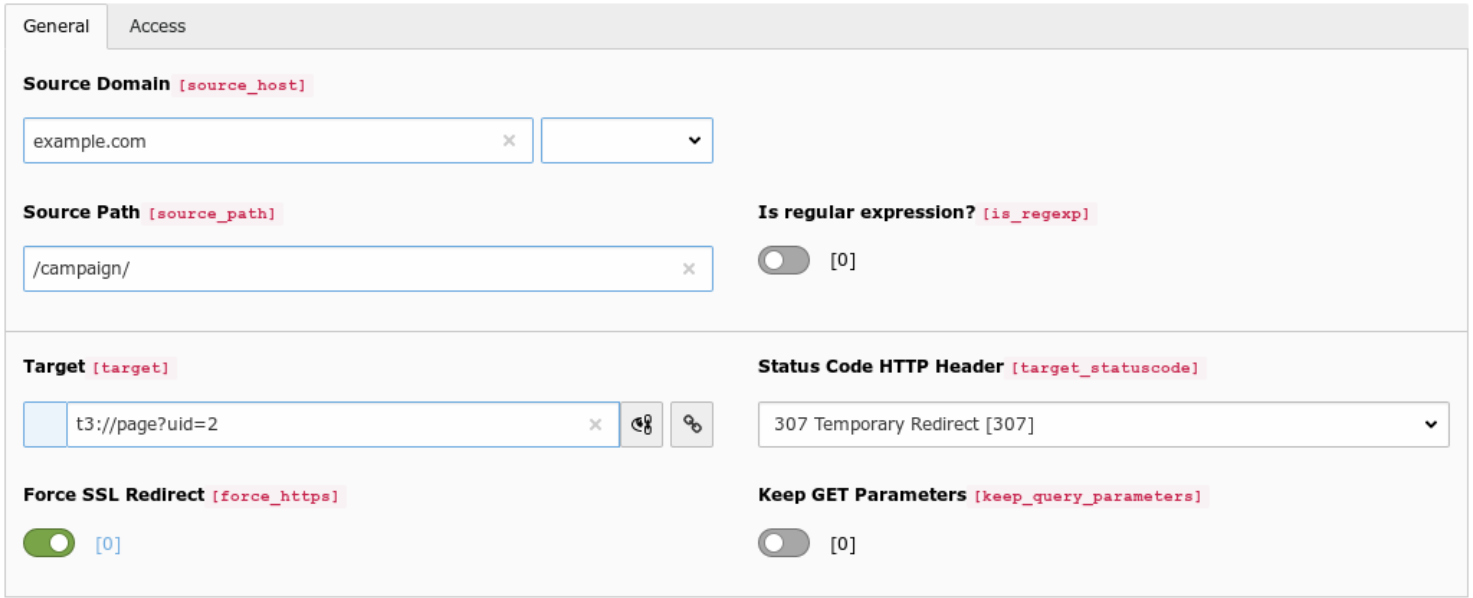
The main purpose is to store settings related to the configuration of a site, e.g. languages, domains, routing, error handling, etc.



Site Management

Site Management → Redirects

The **Redirects** module allows integrators and editors to configure redirects. The target can be a page, an external URL, a file, etc.



Site Management

Site Configuration in TypoScript

Site configuration can be accessed via `getText` property in TypoScript:

```
page.10 = TEXT
page.10.data = site:base
page.10.wrap = The base URL is: |

page.20 = TEXT
page.20.data = site:customConfigKey.nested.value
page.20.wrap = The nested value is: |
```

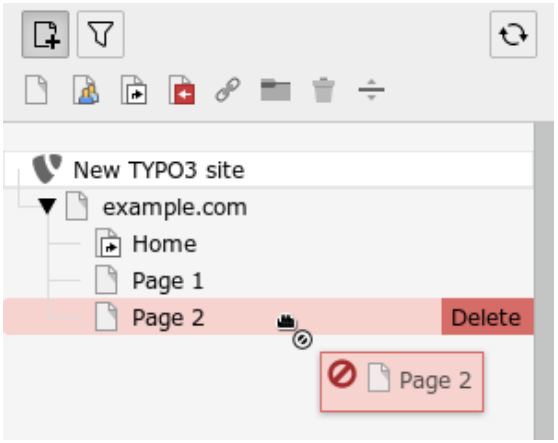
Backend User Interface

The TYPO3 administration interface is now better than ever

Backend User Interface

Page Tree

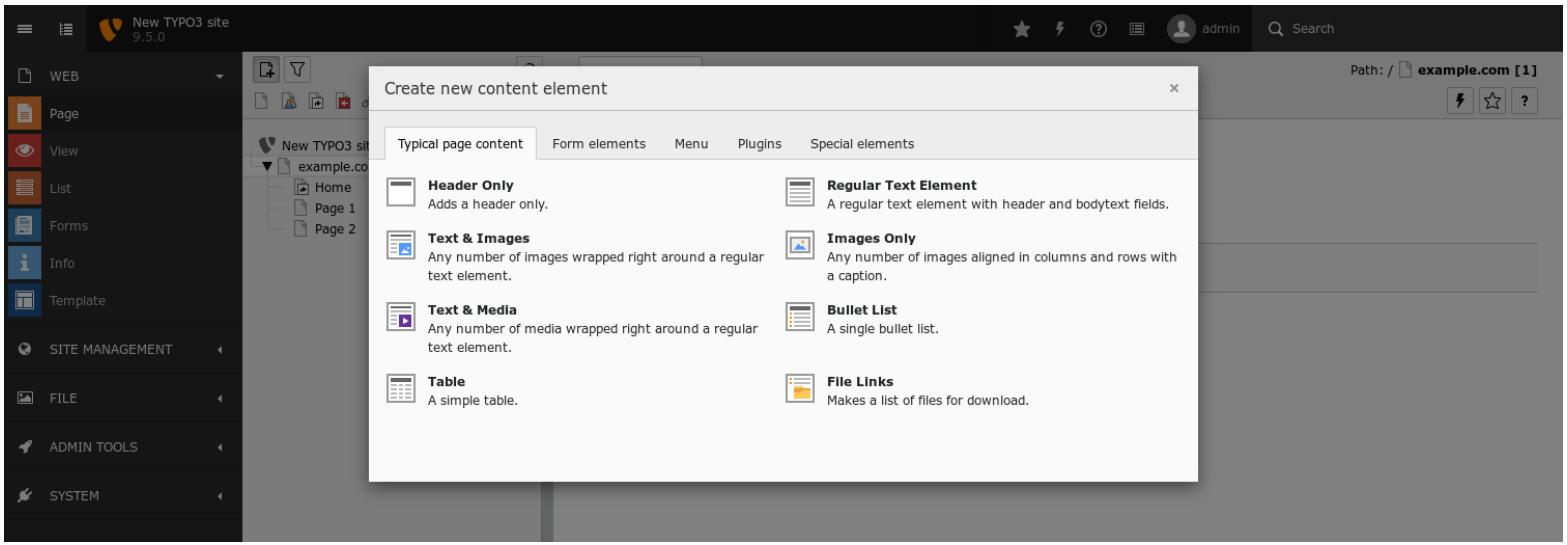
- Page tree is now based on SVGs and features superfast rendering times
- All ExtJS code has been removed completely from the TYPO3 backend
- Delete page by simply moving them to the right



Backend User Interface

Modal Windows

- TYPO3 now uses modal windows consistently in the backend
- This ensures a smooth and non-interruptive interaction with the system
- For example, when adding a new content element:

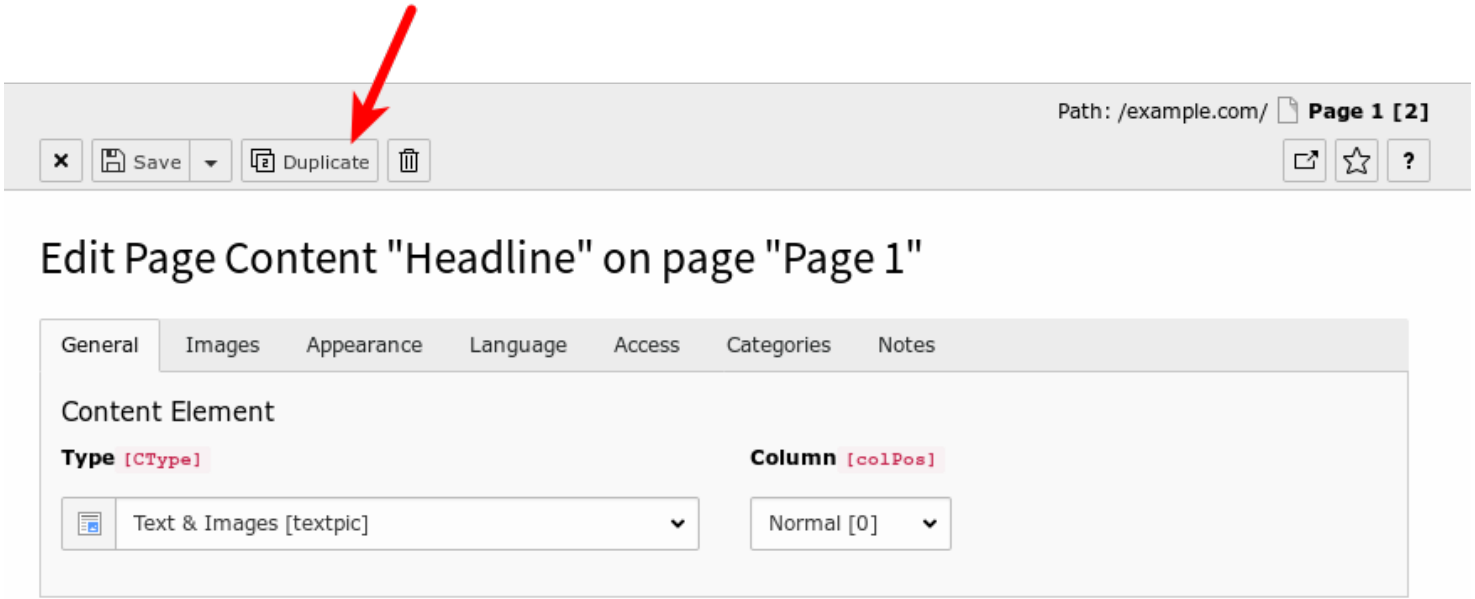


Backend User Interface

Duplicate Content Elements

- Button to duplicate a content element with a single mouse click
- Visibility can be configured in userTSConfig ("1" = enabled):

```
options.showDuplicate = 1
options.showDuplicate.[table] = 1
```



Backend User Interface

Further Improvements

- Images are now rotated automatically on upload/edit, based on their orientation stored in the EXIF metadata of the image
- "Toggle switches" have been introduced, which are also a useful tool to allow users to switch between two states easily
- Thumbnail images are now loaded asynchronously
  (for example in the filelist)
- In debug mode, the field name of every FormEngine field is shown to admin users in the backend
  (see "In-Depth Changes" for an example)
- and many more...

Conditional Variants

New feature for form elements

Conditional Variants

Conditional Variants in `EXT:form`

- New feature for extension "Forms": *conditional variants*
- Variants can contain conditions and allow changing properties of a form element
- This makes it possible to manipulate form element values, validator and finisher options, etc. based on conditions

Conditional Variants

Conditional Variants in `EXT:form`

- Typical use cases are for example:
  - Translate form element values depending on the current frontend language
  - Set and remove validators depending on the value of another form element
  - Set finisher values depending on the value of a form element.
  - Hide a form element in certain finishers and on the summary page.
  - Hide entire pages in the workflow depending on the value of a form element.
  - and many more...
- Official documentation contains further details and examples

Admin Panel

An insight into the internal processes of TYPO3 at run-time

Admin Panel

Re-developed Admin Panel

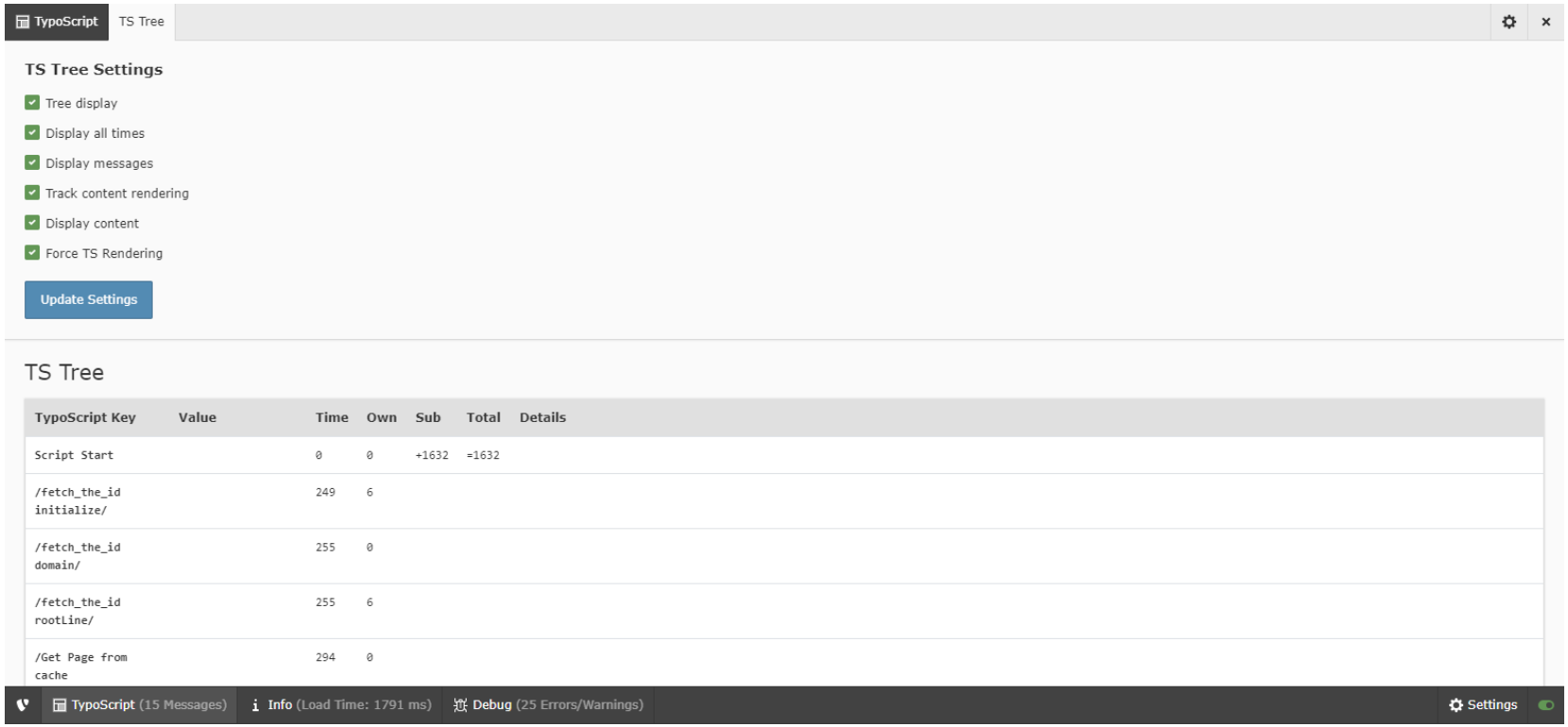
The Admin Panel received a complete overhaul regarding its design as well as the underlying code and architecture.

It is displayed at the bottom of a page in the frontend of TYPO3. The toggle button at the right allows integrators and editors to enable and disable the Admin Panel. The screenshot below shows the *enabled* state.

Admin Panel

Admin Panel: TypoScript Options

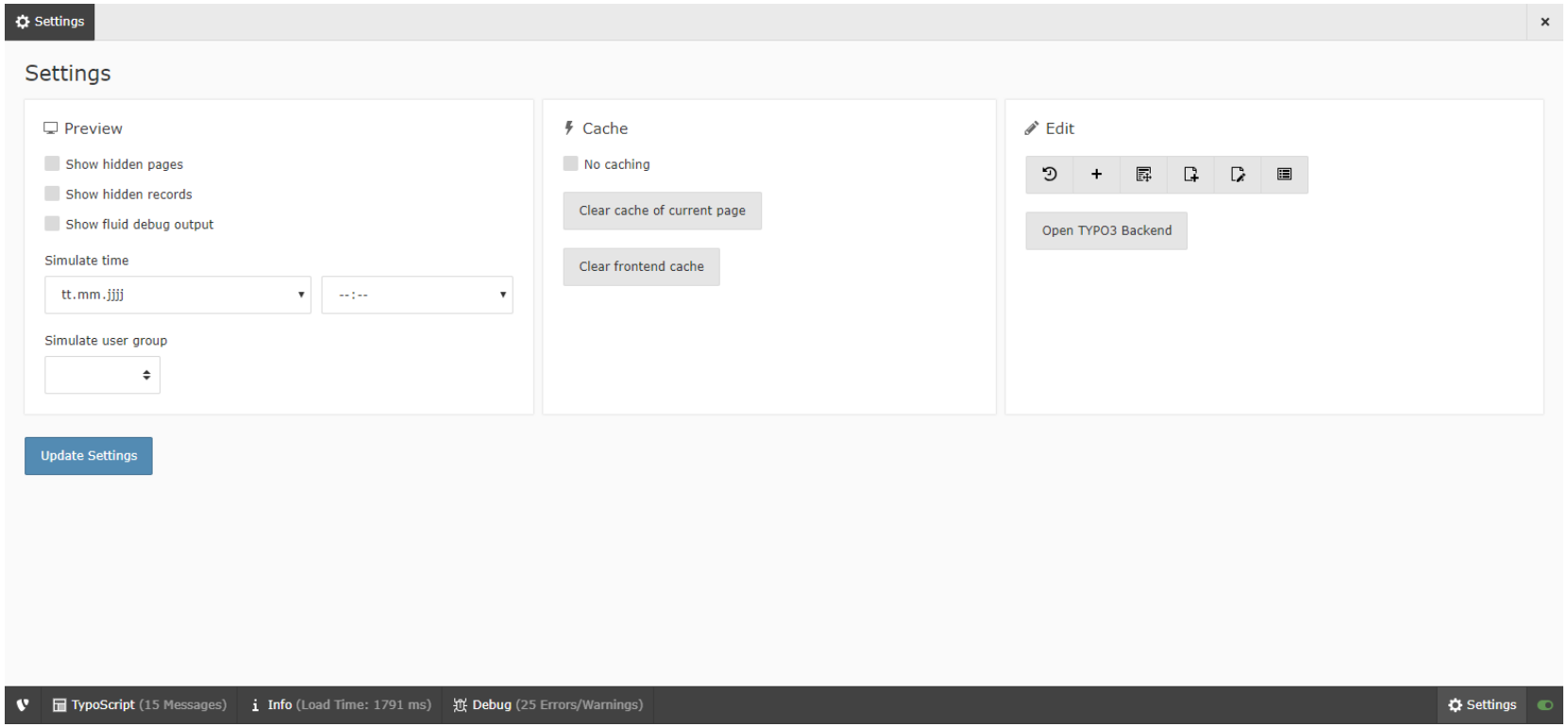
Example screenshot below shows TypoScript options.



Admin Panel

Admin Panel: Configuration Options

Example screenshot below shows configuration options ("Settings").



Privacy and Security

General Data Protection Regulation (GDPR) and more...

Privacy and Security

Anonymize IP Addresses

- Scheduler task can be activated to anonymize IP addresses in several database tables after a certain period of time
- For example table `sys_log`, after 30 days:

Scheduled tasks

	ID	Task	Type	Frequency	Parallel Execution	Last Execution	Next Execution	
☐	1	Anonymize IP addresses in database tables (scheduler) Table: sys_log after 30 days	Recurring	0 1 * * *	No	-	11-06-18 01:00	

- You can find more information on GDPR on the TYPO3 GmbH Blog

TYPO3

Privacy and Security

FE/BE User Accounts and Passwords

- Plain text passwords are not longer possible for BE/FE users at all
- Inactive FE/BE user records can now be removed from the database by adding scheduler task "Table garbage collection task" and enabling "Clean all available tables"

  (data that does not exist, cannot be compromised in case of a security breach)

```
<?php
$tableGarbageCollectionTask = \TYPO3\CMS\Scheduler\Task\TableGarbageCollectionTask::class;
$GLOBALS['TYPO3_CONF_VARS']['SC_OPTIONS']['scheduler']['tasks'][$tableGarbageCollectionTask]
  ['options']['tables'] = [
  'be_users' => [
    'dateField' => 'lastlogin',
    'expirePeriod' => 30
  ]
];
```

- See documentation for further details

Privacy and Security

No-cookie Domain for YouTube Videos

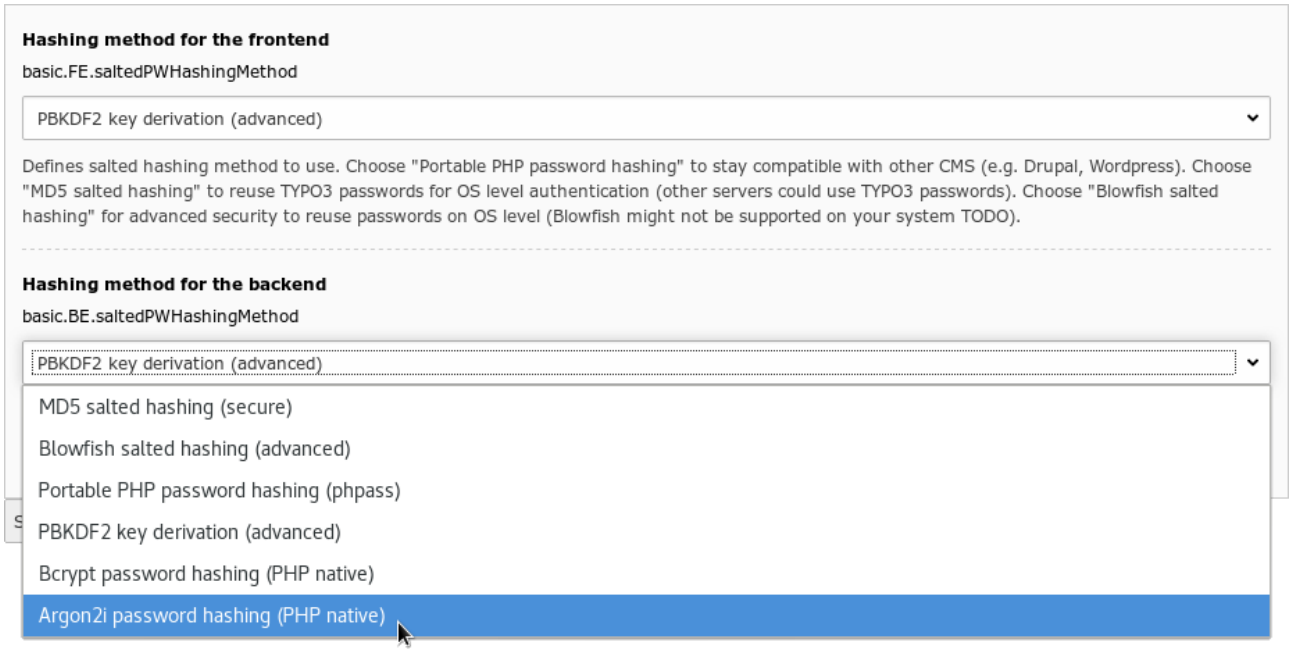
- YouTube videos are rendered by accessing the no-cookie domain `https://www.youtube-nocookie.com` by default
- The regular domain `www.youtube.com` can be forced by the following TypoScript configuration, if required:

```
lib.contentElement {
  settings {
    media {
      additionalConfig {
        no-cookie = 0
      }
    }
  }
}
```

Privacy and Security

Password Hashing API

- TYPO3 now uses the PHP Password Hashing API, which features algorithms, such as Argon2i and PBKDF2



Privacy and Security

Password Hashing API

- Integrators can choose between several password hashing methods for FE and BE user passwords
- Given that MD5 is deemed highly insecure to protect passwords today, the support of MD5 hashes has been dropped
- If necessary, password hashes are automatically updated when users log in

In-depth Changes

Candy for Integrators and Developers

In-depth Changes

"Management" Database Columns

- Database schema analyzer automatically creates TYPO3 "management" columns by reading the TCA
- Developers do not need to state these fields in file `ext_tables.sql`
- Management fields are for example:
  `uid`, `pid`, `crdate`, `cruser`, `hidden`, `deleted`, `sortby`, etc.
  (also fields used for translations, versioning, workspaces)
- Field definitions in `ext_tables.sql` take precedence over automatically generated fields, which means they can be customized if required

In-depth Changes

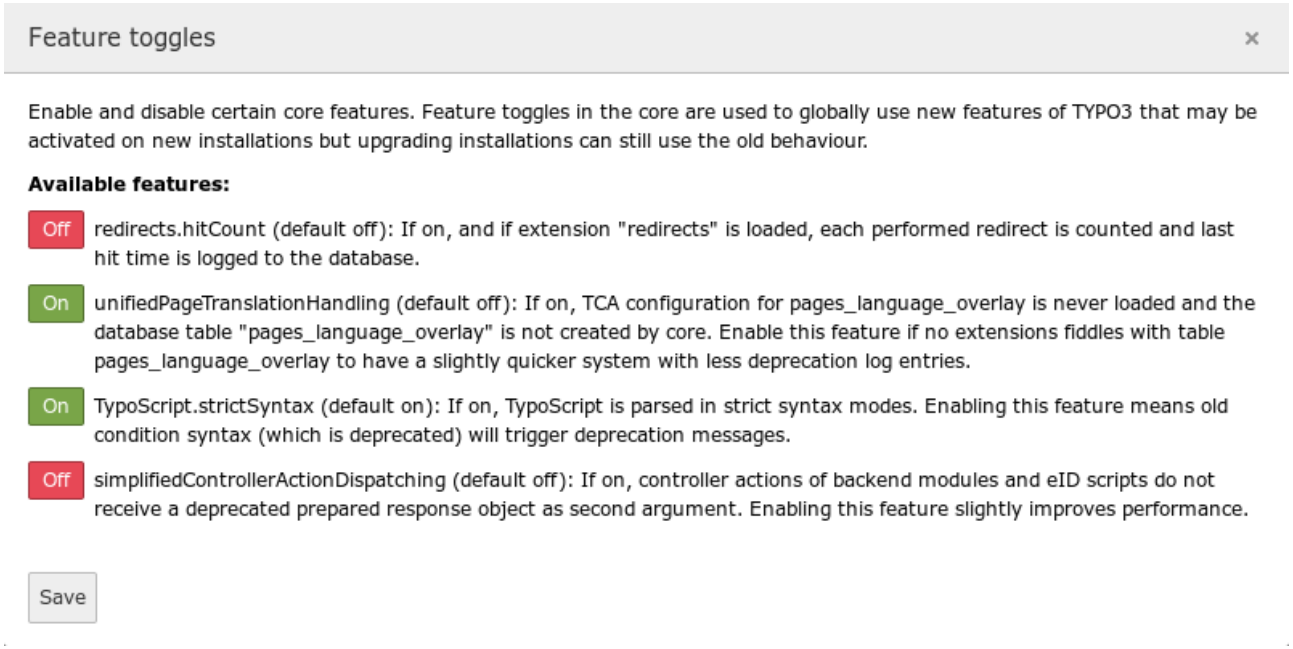
Context API

- A new Context API was introduced in TYPO3 version 9.4
- The main goal of this concept is to centralize global variables
- The API aims to replace globally available objects (e.g. `TSFE`, `sys_page`, `BE_USER`, etc.) and to make them available in a common, structured and logical way
- Instead of exposing a full object (e.g. the `BE_USER` object), "aspects" contain properties, which are relevant and required only
- Extension developers can add aspects to the current context
- See documentation for further details and examples how to use the API

In-depth Changes

Feature Toggles

- You can now enable or disable core feature with a new function: Feature Toggle (under ADMIN TOOLS → Settings)



In-depth Changes

Feature Toggles

- The Feature Toggle lets developers implement features in parallel to their legacy version
- Integrators and site administrators can decide when they want to switch to new features
- Developers can leverage an API class
- This also means that the TYPO3 core and extensions can provide alternative functionality for a certain feature

In-depth Changes

Symfony ExpressionLanguage

- The Symfony ExpressionLanguage component has been implemented for TypoScript conditions (frontend and backend)
- Some examples:

```
[page["uid"] in 18..45]
# This condition matches, if current page uid is between 18 and 45
[END]

[not ("foo" matches "/bar/")]
# This condition matches, if "foo" does not match the regular expression '/bar/'
[END]

[request.getNormalizedParams().getHttpHost() == 'example.com']
# This condition matches, if current hostname is 'example.com'
[END]
```

- Using old condition syntax triggers a deprecation message

In-depth Changes

Symfony ExpressionLanguage

- Expression Language can also be used in your custom code
- The TYPO3 core features the class `DefaultProvider`, which can be used directly (see example below) and custom implementations can extend the class `AbstractProvider`

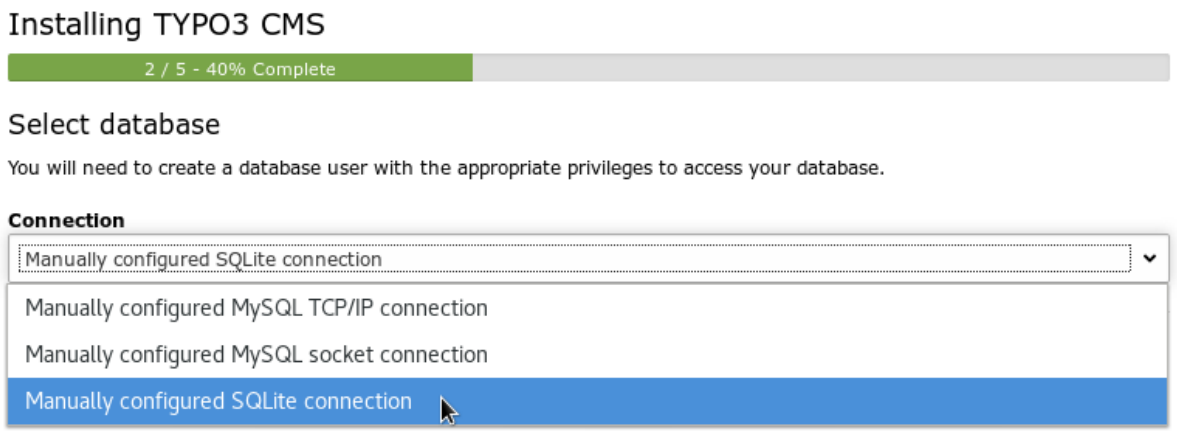
```
use \TYPO3\CMS\Core\ExpressionLanguage\DefaultProvider;
use \TYPO3\CMS\Core\ExpressionLanguage\Resolver;

$provider = GeneralUtility::makeInstance(DefaultProvider::class);
$conditionResolver = GeneralUtility::makeInstance(Resolver::class, $provider);
$conditionResolver->evaluate('1 < 2'); // result is true
```

In-depth Changes

Install TYPO3 on SQLite

- TYPO3 now supports SQLite, a self-contained, lightweight open source SQL database engine
- SQLite can be selected during the web-based installation process, if PHP module "pdo_sqlite" is installed and enabled:



In-depth Changes

Install TYPO3 on SQLite

- Database is stored in a single file, which means TYPO3 instances can now run natively in PHP, including the data storage
- Using SQLite makes sense for relatively small TYPO3 sites or e.g. for test and development instances
- System administrators should take appropriate actions to protect the `*.sqlite` file from unauthorized access if the file is stored inside the web container (depends on type of setup)

In-depth Changes

Field Names in Debug Mode

- TYPO3 integrators and developers often deal with input fields in the backend, e.g. when setting up access permissions or during TsConfig configuration
- Instead of having to look into the source code of the browser, field names are now displayed for each field generated by the FormEngine now
- This only applies to users with administrator privileges and requires that the debug mode is enabled in TYPO3:

  `$GLOBALS['TYPO3_CONF_VARS']['BE']['debug']`

In-depth Changes

Mail Queue

- Emails generated by TYPO3 are sent out immediately by default
- TYPO3 v9 LTS now supports SwiftMailer's spool functionality, where message are saved in a queue first and processed later
- Option 1: spool mails in memory

  (emails are only sent, if request got executed without any exceptions or errors)

```
$GLOBALS['TYPO3_CONF_VARS']['MAIL']['transport_spool_type'] = 'memory';
```

- Option 2: spool mails in files

```
$GLOBALS['TYPO3_CONF_VARS']['MAIL']['transport_spool_type'] = 'file';
$GLOBALS['TYPO3_CONF_VARS']['MAIL']['transport_spool_filepath'] = '/folder/of/choice';
```

In-depth Changes

Mail Queue

- The following console command can be used to process the queue and send out spooled emails

  Process all spooled emails:

  ```
  $ ./typo3/sysext/core/bin/typo3 swiftmailer:spool:send
  ```

  Process spooled emails, but not more than 10 messages:

  ```
  $ ./typo3/sysext/core/bin/typo3 swiftmailer:spool:send --message-limit=10
  ```

  Process spooled emails, but no longer than 10 seconds:

  ```
  $ ./typo3/sysext/core/bin/typo3 swiftmailer:spool:send --time-limit=10
  ```

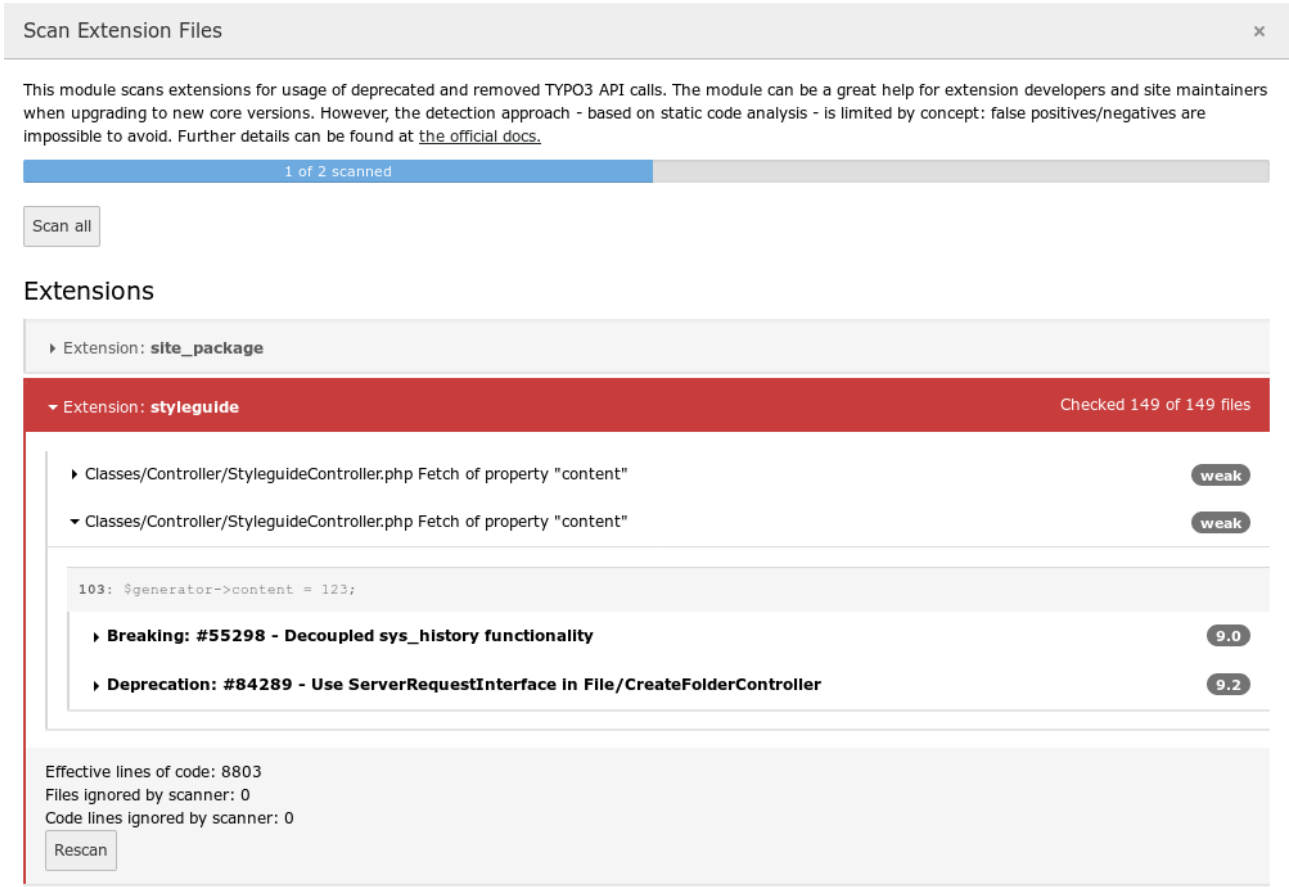
In-depth Changes

Extension Scanner

- An Extension Scanner has been added to TYPO3 that aims to help when upgrading TYPO3 from one major version to the next
- This tool can scan extension code for the usage of TYPO3 core APIs which have been removed or marked deprecated
- The result is a detailed overview of actions required
- If available, it references to appropriate documentation on how to migrate the code in question
- Standalone tool TYPO3 Scanner (by Michiel Roos)
- Further details in a video on YouTube (by TYPO3 GmbH)

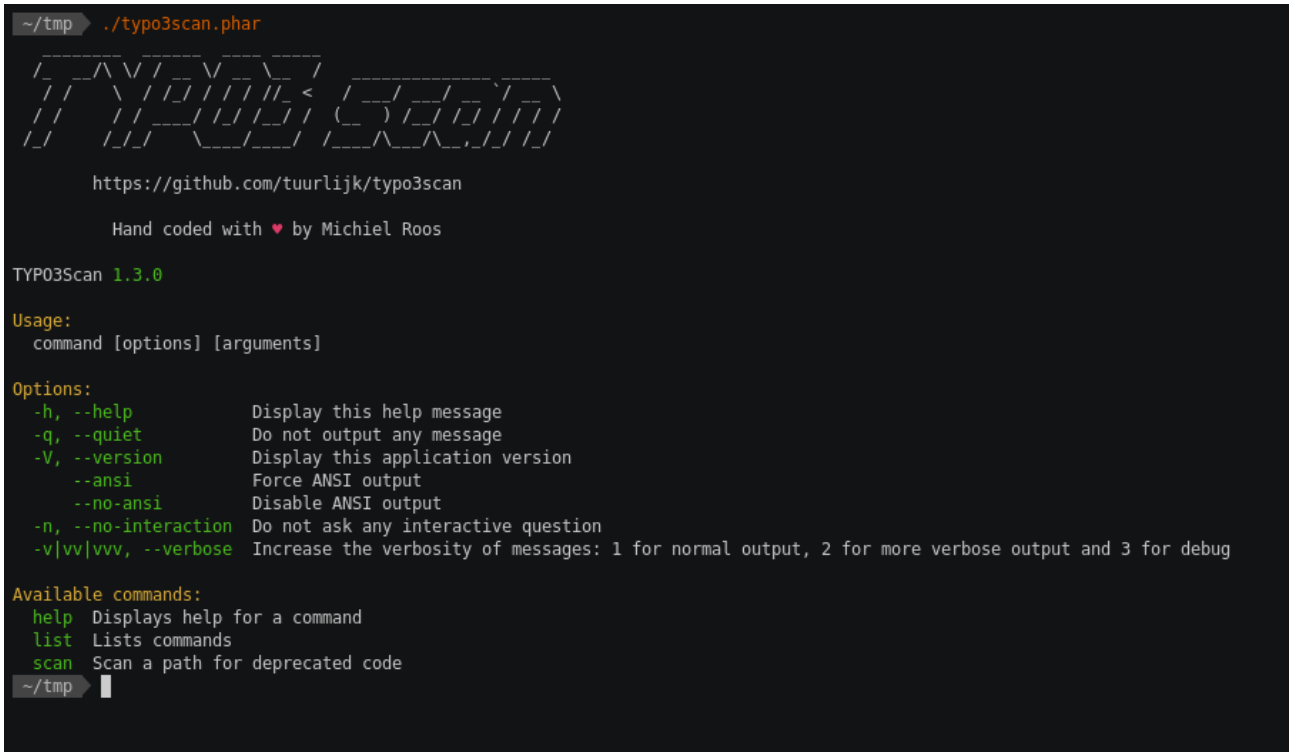
In-depth Changes

Extension Scanner (in TYPO3 v9 LTS)



In-depth Changes

Extension Scanner (Standalone)



In-depth Changes

Extbase Translation Handling

- Extbase now renders translated records the same way as TypoScript does
- The new behaviour is controlled by the feature switch:

```
config.tx_extbase.features.consistentTranslationOverlayHandling
  = 1
```

- The new behaviour is the default in v9 LTS (the feature switch will be removed in v10)
- Learn more about how to query data using Extbase in the TYPO3 documentation

In-depth Changes

PHP Standard Recommendation (PSR)

- The PHP Standard Recommendation (PSR) is a specification published by the PHP Framework Interop Group
- TYPO3 introduced PSR-15 middleware in the frontend and backend
- All web requests in the TYPO3 core return a response that complies with PSR-7, the standard for HTTP message interfaces
- The PSR-3 standard describes a logging interface for PHP applications, which is used by all logging procedures throughout the TYPO3 system now

Deprecated/Removed Functions

Deprecated/Removed Functions

To describe all deprecated/removed functions
would go beyond the scope of this document.

Please see the TYPO3 documentation for further details.

Installation and Upgrade

There is no better time to check out TYPO3 v9 LTS

Installation and Upgrade

Classic Installation Method

- Official *classic* installation procedure under Linux/Mac OS X (DocumentRoot for example `/var/www/site/htdocs`):

```
$ cd /var/www/site/
$ wget --content-disposition get.typo3.org/9
$ tar xzf typo3_src-9.5.0.tar.gz
$ cd htdocs
$ ln -s ../typo3_src-9.5.0 typo3_src
$ ln -s typo3_src/index.php
$ ln -s typo3_src/typo3
$ touch FIRST_INSTALL
```

- Symbolic links under Microsoft Windows:
  - Use `junction` under Windows XP/2000
  - Use `mklink` under Windows Vista and Windows 7 and higher

Installation and Upgrade

Installation Using `composer`

- Installation using *composer* under Linux, Mac OS X and Windows 10:

```
$ cd /var/www/site/
$ composer create-project typo3/cms-base-distribution typo3 ^9
```

- Alternatively, create your custom `composer.json` file and run:

```
$ composer install
```

  Further details and examples for `composer.json` files are available at:
  https://composer.typo3.org

Installation and Upgrade

Upgrade to TYPO3 v9 LTS

- Upgrades only possible from TYPO3 v8 LTS
- TYPO3 < v8 LTS should be updated to TYPO3 version 8.7 first

- Upgrade instructions:
  https://wiki.typo3.org/Upgrade#Upgrading_to_9.5_Long_Term_Support
- Official TYPO3 guide "TYPO3 Installation and Upgrading":
  https://docs.typo3.org/typo3cms/InstallationGuide
- General approach:
  - Check minimum system requirements (PHP, MySQL, etc.)
  - Review **deprecation_*.log** in old TYPO3 instance
  - Update all extensions to the latest version
  - Deploy new sources and run Install Tool -> Upgrade Wizard

Sources and Authors

Sources and Authors

Sources

TYPO3 News:

- https://typo3.org/project/news/

Release Infos:

- https://get.typo3.org/release-notes/9.x/TYPO3_CMS_9.5.0
- INSTALL.md and ChangeLog
- typo3/sysext/core/Documentation/Changelog/9.5/*

TYPO3 Bug-/Issuetracker:

- https://forge.typo3.org/projects/typo3cms-core

TYPO3 and Fluid Git Repositories:

- https://git.typo3.org/Packages/TYPO3.CMS.git
- https://github.com/TYPO3/Fluid

TYPO3

Sources and Authors

TYPO3 CMS What's New Team:

Pierrick Caillon, Richard Haeser, Inge Bateman, Jigal van Hemert
Henrietta Kucsovan, Sinisa Mitrovic, Michael Schams and Roberto Torresani

https://typo3.org/help/documentation/whats-new/