

Joomla Cheat Sheet

PLATFORM

App	Entry point
Site	index.php (SiteApplication)
Administrator	administrator/index.php
API	api/index.php (ApiApplication)
Console	php cli/joomla.php
Installation	installation/index.php (deleted after setup)

Lifecycle: entry → includes/app.php → framework.php builds UI container → execute() → initialise (user, language) → **route** (SiteRouter, menu item, access) → **dispatch** (component Dispatcher → controller → view) → **render** (template, jdoc; include) → compress → respond. Plugins run in every app.

Events: onBeforeExecute onAfterInitialise onAfterRoute onAfterInitialiseDocument onAfterDispatch onBeforeRender onBeforeCompileHead onAfterRender onAfterCompress onBeforeRespond onAfterRespond onError; onBefore/AfterExtensionBoot.

Type	Prefix / example
component	com_tallpine
module	com_tallpine_nexthikes
plugin	plg_group-<name>, e.g. plg_content_tallpine_conditions
template	tpl_folder cassiopeia_tallpine
language, library, package, file	de-DE_lib_ pkg_tallpine_files_

Series	Status	2026-10-30
6.2	current minor; bugfix to 2028-10-17, security to 2029-10-16; 6.2.1 planned 2026-11-24	
5.4	security only until 2027-10-12 (5.4.10 last bugfix)	
7.0	projected Oct 2027 with 6.4 bridge (not an official date)	
4.x / 3.x	end of life (Oct 2025 / 2025-02)	

Major every 2 years (Oct, odd years); 4 minors, 6 months apart; **x.y = bridge**; 1 y bugfix + 1 y security after x.4.0. Requirements rise only in a new major.

	Joomla 6	Joomla 5.4
PHP	8.3 min, 8.4 rec.	8.1 min, 8.3 rec.
MySQL	8.0.13 (8.4 rec.)	8.0.13
MariaDB	10.4 min, 10.6 supp.	10.4
PostgreSQL	12 min, 14 supp.	12
Web	Apache 2.4, nginx 1.26, IIS 10	nginx 1.21

PHP ext: json simplexml dom zlib gd, DB driver, mbstring; memory_limit 256M. No downgrades.

site/ administrator/ api/ cli/ components/ includ es/ layouts/ libraries/ modules/ plugins/ templates/ media/ images/ language/ cache/ tmp/ logs/ publi c/ configuration.php htaccess.txt robots.txt.dist

Registered, Special, Super Users. Actions: core.login.site[admin]api[offline, core.admin, .manage, .options, .create, .edit, .edit.own, .edit.state, .delete, .edit.value, .execute, .transition, .assets, global → component → category → item; child inherits. Deleted cannot be undone below; Not Allowed = default deny. Hiding a menu item does not protect the URL.

Workflow: off by default; Articles → Options → Integration → Enable Workflow. Stage (label) + Transition (sets publish/feature state, notifies, own permission). Basic Workflow = Basic Stage + self-transitions. Category picks workflow; 6.1 visual editor.

Multilingual checklist: 1 install language packs 2 publish **Content Languages** (URL code) 3 menu + Home (Default) item per language, plus Home for All 4 menu module per menu, same position 5 category per language 6 Language Switcher module 7 enable **System - Language Filter** 8 Associations tab / Multilingual Associations 9 Multilingual Status module.

Core components: com_content, categories, tags, fields, contact, banners, newfeeds, wrapper, finder (Smart Search), users, menus, modules, plugins, templates, languages, installer, joomlaupdate, media, mails, messages, associations, privacy, actionslog, scheduler, redirect, guidedtours, config, checkin, Weblinks is separate.

Global Config	Safe production value
Debug / Debug Language	No
Error Reporting	None (or System Default + Log)
Force HTTPS	Entire Site; Behind Load Balancer only behind trusted proxy
Session handler / lifetime	Database or Redis (multi-node) / 15 min
Cache / Log Everything	Conservative+handler / No
CORS origin	named origin, never *
Text Filters	Default Blocklist or stricter
configuration.php	mode 0444, owned by deploy user

SEF/SEO: sef on; sef_rewrite needs .htaccess/web.config/nginx rule; suffix optional (decide once); Unicoide aliases; **System - SEF:** Site Domain, strict index.php, trailing slash, Strict Routing; browser title/meta per menu item and article; staging noindex, remove at go-live; System - Redirect (collect URLs); Schema.org plugin; robots.txt + sitemap.

INSTALL

Steps: PHP 8.3+ and empty DB → download full package, verify checksum → extract *contents* into root → browse: language, **site name** → **Super User** (avoid admin) → **DB** (mysql / pdomysql / pgsql, prefix, encryption) → Install → Congratulations: extra languages, **Disable Automated Updates** opt-out → installation/ removed → htaccess.txt to .htaccess, SEF on → log in.

php installation/joomla.php install --site-name="Tallpine Hiking Club" \ --admin-user=admin --admin-password="STALL PINE ADMIN PASSWORD" \ --admin-email=admin@tallpine.example --db-type=mysql --db-host=db --db-name=tallpine --db-user=tallpine --db-pass="STALLPINE_DB_PASSWORD" \ --db-prefix=tp_ --public-folders-public

Public folder (5.0+): code outside web root; doc root = public() (index.php, defines.php, administrator/, api/, symlinks media images files); site:create-public-folder .htaccess is a copy; nginx: root ../public, try_files \$uri /index.php?vars, /api/ → /api/index.php.

compose.yaml (secrets in untracked .env) services: joomla: (image: "joomla:6.2-php8.4-apache", port 80: ["8080:80"], depends-on: {db: {condition: service_healthy}}, environment: {JOOMLA_DB_HOST: db, JOOMLA_DB_USER: R: tallpine, JOOMLA_DB_PASSWORD: \${TALLPINE_DB_PASSWORD:??}, JOOMLA_DB_NAME: tallpine, JOOMLA_SITE_NAME: Tallpine Hiking Club, JOOMLA_ADMIN_USERNAME: tallpine-admin, JOOMLA_ADMIN_PASSWORD: \${TALLPINE_ADMIN_PASSWORD:??}, JOOMLA_ADMIN_EMAIL: \${TALLPINE_ADMIN_EMAIL:??}, JOOMLA_EXTENSIONS_PATHS: /packages/pkg_tallpine.ezip, volumes: ["/joomla_data:/var/www/html"/, "/packages:/packages:/ro"], db: (image: "mariadb:11.8", environment: {MARIADB_DATABASE: tallpine, MARIADB_USER: tallpine, MARIADB_PASSWORD: \${TALLPINE_DB_PASSWORD:??}, ...}) # .env: TALLPINE_DB_PASSWORD=CHANGE_ME_DB

Env vars: JOOMLA_DB_HOST db_USER db_PASSWORD (FILE) DB_NAME DB_TYPE (mysql|pgsql), JOOMLA_SITE_NAME ADMIN_USER ADMIN_USERNAME ADMIN_PASSWORD ADMIN_EMAIL EXTENSIONS_URLS_EXTENSIONS_PATHS SMTP_HOST SMTP_HOST_PORT. First start only. Tags = apache -fpm -fpm-alpine; pin minor.

Using Joomla

Content: Category (nested, per component) → Article (intro/full text, state, featured, access, language) · **Tags** (nested, same per item) · **Custom fields** (contexts: article, contact, user, category; field groups: core,edit,value).

Menu Item → **URL:** a menu item stores link (index.php?option=com_content&view=category&layout=blog&id=66) + alias; path = parent aliases. Heading Trails → *Alpine* (Category Blog) = /trails/alpine; article = /trails/alpine/lake-tarn-circuit. Renaming an alias breaks child URLs. Types: Single Article, Category Blog/List, Featured, Tagged, Alias, URL, Heading.

Module assignment: position + **Menu Assignment** (On all pages, No pages, Only on pages selected, All except selected) AND access level AND language AND publish dates. 7tp-1 previews positions. Disabled extension hides module.

ACL: two questions. **See** = viewing access level (set of groups; #_viewlevels; getAuthorisedViewLevels()). **Do** = action on asset (#_assets, rules JSON; \$user->authorise('core.edit', 'com.tallpine.trail.22')). Groups: Public(1) → Guest(9), Registered(2) → Author(3) → Editor(4) → Publisher(5; Manager(6) → Administrator(7); Super Users(8, core.admin). Levels: Public, Guest,

TEMPLATES

<extension type="template" client="site" method="upgrade">
name="cassiopeia_tallpine"</name><version>1.0.0</version>
inheritable=0</inheritable><parent>cassiopeia</parent><!-- parent: 1 -->
files="filename=index.php/<filename><filename>joomla.asset.json/<filename>
filename=templateDetails.xml/<filename><folder>html/<folder></files>
media destination="templates/site/cassiopeia_tallpine" /</media>
folder="css/<folder></folder>js/<folder></media>
positions="position=sidebar-right</position>...</positions></extension>

jdoc:include: type="metas" styles" scripts" or "head" message" component" modules" name="pos"

url is relative to media/<ext>/css/js; version auto[no]cache(6.1)fixed. Invalid JSN breaks every page.

Child render: System → Site Templates → Cassiopeia Details and Files → **Create Child Template** (name tallpine → cassiopeia_tallpine; letters/digits_ only) → copy only changed files into html/, CSS to media/templates/site/cassiopeia_tallpine/. one level only; assign style to menu items. Cassiopeia edits are lost at update. 6.0 core child: cassiopeia_extended.

ADMINISTRATION

Update channel (Joomla Update → Options); default (current major, non-testing), next (next major once latest of current installed), custom URL. **Minimum Stability** Stable (default; RC for staging only). Pre-update check for minor/major; TUF-verified (5.1+).

Automated Core Updates (5.4, 6.0): minor/patch/security only, never major; on for new installs, off for upgraded sites; needs public reachability (no VPN/basic auth), channel **default - Stable**, server meets target requirements. Receive System Emails for result mails; shares site URL and versions with the project; update, token is a secret.

MFA (4.2+): Verification Code (TOTP), Authentication Code by Email, Web Authentication (WebAuthn, passkeys), YubiKey; **Fixed Code** test only (disabled).

forceMFAUserGroups, neverMFAUserGroups. Require for every group reaching the admin. API: Token plugin on, Basic Auth off.

HTTP headers (System - HTTP Headers): default X-Frame-Options: SAMEORIGIN, Referrer-Policy: strict-origin-when-cross-origin, Cross-Origin-Opener-Policy: same-origin; HSTS off (max-age=31536000 once HTTPS everywhere); CSP off, start (Content-Security-Policy-Switcher-only; addPermissions-Policy, Password min 12. PoW captcha (6.1) must be chosen in Global Config).

configuration.php keys: site: name of file dbtype host user password db dbprefix dbencryption secret gzip error_reporting tmp_path log_path live_site force_ssl -offset lifetime session_handler session_metadata -mailer mailfrom smtp_ debug cachetime cache_handler cors_ debug debug_lang sef sef_rewrite sef_suffix unicodeslugs _behind_loadbalancer. Modes: file 0444, tmp cache logs 0755, rest 644/755 not PHP-writable.

Caching: caching 0 off / 1 Conservative / 2 Progressive (guesses only; never logged-in users); Cache Time 15 min default; Platform Specific Caching off for responsive. Handlers: **File, Redis, Memcached** (experimental), **APCu**. System - Page Cache (guesses). Clear after deploys.

CLI (php cli/joomla.php; -q -n -v --live-site=URL; key=value args; exit 0 = ok):
cache:clean config:get config:set
core:update:check core:update core:update:channel
core:autoupdate:register
core:autoupdate:unregister
database:export database:import
maintenance:database(-fix)
extension:list :install :remove :enable :disable (6.1):discover :discover:list :discover:install
finder:index (purge) scheduler:list :state :run session:gc session:metadata:gc
site:down site:up site:create-public-folder
update:extensions:check update:joomla:remove-old-files
user:list :add :addtogroup :removefromgroup :reset-password :delete

Quick fixes: blank page/500: read logs, error_reporting="maximum", revert. Installer loops: configuration.php empty. Broken plugin: UPDATE #_extensions SET enabled = 0|1 WHERE extension_id = 1234; (re-enable BC6 the same way). Stale class: delete administrator/cache/autoload_ps4.php. Locked out after HTTPS: config:set force_ssl=0. Update refuses: maintenance:database --fix. Back up first, no downgrade.

TEMPLATES

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inheritable=0</inheritable><parent>cassiopeia</parent><!-- parent: 1 -->
files="filename=index.php/<filename><filename>joomla.asset.json/<filename>
filename=templateDetails.xml/<filename><folder>html/<folder></files>
media destination="templates/site/cassiopeia_tallpine" /</media>
folder="css/<folder></folder>js/<folder></media>
positions="position=sidebar-right</position>...</positions></extension>

jdoc:include: type="metas" styles" scripts" or "head" message" component" modules" name="pos"

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EXTENSIONS

<extension type="component" method="upgrade"><name>com_tallpine</name>
version="1.0.0"</version><nameSpace>path="src">Tallpine</nameSpace><nameSpace>Tallpine</nameSpace>
administration=<menu>com_TALLPINE</menu><files folder="administrator/components/com_tallpine">
folder="sql/<folder></folder>services/<folder></folder>sql/<folder></folder>css/<folder></folder>
files=</files></administration></files></extension>
ts/com_tallpine"...</files></extension>

Folders: administrator/components/com_x / components/com_x / api/components/com_x; modules/mod_x; plugins/<groups></name>; templates/tp/; media/com_x_PSR-4.

Vendor/Component/Name/Administrator/ [Site]Api → src; Vendor/Module/Name/Style; Vendor/Plugin/Group/Name. Case matters on Linux.

// services/provider.php: return new class implements ServiceProviderInterface public function register(Container \$c): void { \$c->registerServiceProvider(new MVCFactory(\$n s)); \$c->registerServiceProvider(new ComponentDispatch herFactory(\$ns)); \$c->registerServiceProvider(new RouterFactory(\$n s)); \$c->set(ComposerInterface::class, fn(Container \$c) => new TallpineComponent(\$c->get(ComponentDispatch herFactoryInterface::class)); }> setMVCFactory(\$c->get(MVCFactoryInterface::c lass)); }

MVC piece

Extension	Class
Extension\TallpineComponent	MVCComponent
Dispatcher\Dispatcher (ComponentDispatcher)	Dispatcher\Dispatcher (ComponentDispatcher)
Controller	DisplayController (BaseController), TrailController (FormController), TrailsController (AdminController)
Model	TrailsModel (ListModel), TrailModel (AdminModel)
Table / View	TrailTable (Table) / View/Trails/HtmlView / tmp/Trails/default.view

// Site/Service/Router extends RouterView (ctor \$v, new RouterViewConfiguration('trails')) ; \$this->routerViewConfiguration(\$v => (new RouterViewConfiguration('trail'))->setKey('id')->setParent(\$t); \$this->registerView(\$v); parent::__construct(\$ap p => \$p); \$this->attachRule(new MenuRules(\$this)); // + Pre processRules, \$this->attachRule(new StandardRules(\$this)); // + NomenclatureRules, \$this->attachRule(new StandardRules(\$this)); // + getTrailSegment(\$id,\$q) / getTrailId(\$segment,\$q) <form addfield(\$prefix="Tallpine\Component\Tallpine\Administrator\Field"> <field name="difficulty" type="TrailDifficulty" label="COM_TALLPINE_DIFFICULTY"/></form> \$db = \$this->getDatabase(); // DatabaseAwareTrai t \$q = \$db->createQuery()->select(\$db->quoteName ('{id}','title'))->from(\$db->quoteName('#_tallpine_trails'))->where(\$db->quoteName('state') = :s)->bind(':s', \$st, ParameterType::INTEGER)->whereIn(\$db->quoteName('access'), \$user->getAuthorisedViewLevels()); \$rows = \$db->setQuery(\$q)->loadObjectList(); // Module Dispatcher extends AbstractModuleDispat cher implements // HelperFactoryAwareInterface (use HelperFactory AwareTrait; protected function getLayoutData() { \$d = paren t->getLayoutData(); \$d['hikes'] = \$this->getHelperFactory()->getHelp er('TallpineNexthikesHelper')->getHikes(\$d['params'], \$this->getApplication ()); return \$d; // Helper: plain class, NON-static methods; provi der: ModuleDispatcherFactory + HelperFactory final class TallpineConditions extends CMSPlugin implements SubscriberInterface { use DatabaseAwareTrait; public static function getSubscribedEvents(): ar ray { return ['onContentPrepare' => 'onContentPrepar e']; } // or /I'm, Priority:L0W public function onContentPrepare(ContentPrepareE vent \$event): void { \$ctx = \$event->getContext(); \$item = \$event->ge tItem(); } // provider: PluginInterface::class => new X(arr ay) PluginHelper::getPlugin('content', 'tallpin e')) // + setApplication(Factory::getApplication()),

CONSOLE

setDatabase(...); manifest group="content" // <folder plugin="tallpine">services/</folder>

Console plugin (groups="console"): on ApplicationEvents::BEFORE_EXECUTE call addCommand(new ImportTrailsCommand()); on command extends AbstractCommand \$this->setName('tallpine:import', doExecute(\$in,out): int.

Task plugin (groups="task"): use TaskPluginTrait; TASKS_MAP['tallpine.trails'] => ['method'=>'synclosures', 'form onTaskOptionsList=>advertiseRoutes, onExecuteTask=>standardRoutineHandler; return Status::OK.

Installer script: InstallerScriptInterface via provider; preflight(\$type,\$adapter) install update uninstall postflight; SQL in sql/install.mysql.utf8.sql, sql/updates/mysql/1.0.1.sql (+ postgreSQL).

<updateservers><server type="extension" name="Tall pine">https://updates.tallpine.example/pkg_tallp ine.xml</server></updateservers>
<updates><update><element>pkg_tallpine</element>< type>package</type><version>1.4.1</version>
<downloads><download url="type=full" format="zi p">https://updates.tallpine.example/d/pkg_tallpi ne-1.4.1.zip</downloadurl></downloads>
<targetplatform name="joomla" version="(5,[4-9] [6],[0-9])"/></php minimum=8.3/php minimum=sha5 12/CHANGE_ME_SHA512/sha512></update></updates>

Security: defined('_JEXEC') or die; token: HTMLHelpers::('form.token') + \$this->checkToken() / Session::checkToken('post') . ACL: \$user->authorise('core.edit', 'com.tallpine.trail',\$id) in every controller/model (and core,edit.own + created by) : input: \$input->post->getInt('id') : output: \$this->escape(\$v) . SQL: bind() / whereIn(), never concatenate secrets from env.

WEB SERVICES API

Item	Value
Base	https://tallpine.example/api/index.php/v1 (/api/v1 with rewriting)
Core routes	/content/articles,/categories,/tags, /users,/menus/site...
Format	Accept: application/vnd.api+json; 404 no route, 406 bad Accept, 401 no auth
Auth	Token plugin X-Joomla-Token: <token> or Authorization: Bearer: user needs core, login, api, and the token plugin enabled; token from user profile
Paging	?page[Limit]=20&page[offset]=40

export JOOMLA_API_TOKEN=CHANGE_ME_TOKEN curl -s -H "Accept: application/vnd.api+json" \ -H "X-Joomla-Token: \${JOOMLA_API_TOKEN}" \ "https://tallpine.example/api/index.php/v1/talp ine/trails?page=5&limit=50"

// plg_webservices.tallpine (group webservices) public static function getSubscribedEvents(): arr ay { return ['onBeforeApiRoute' => 'onBeforeApiRout e']; } public function onBeforeApiRoute(BeforeApiRouteE vent \$e): void { \$e->void { \$e->getRouter()->createCRUDRoutes('/v1/tallpine/t rails', 'trails', 'trails' => 'com.tallpine'); // public route: new Route(['GET'], '/v1/tallpine/o pen-trails', 'trails.openTrails', [], ['component' =>'com.tallpine', 'public'=true]) // API part: api/components/com_tallpine/src/Con troller/View/Serializer } }

Order: route → negotiate → authenticate → controller ACL. Keep Basic Auth off; proxy must pass auth headers and not cache. Headless: CORS to a named origin.

TOOLING AND UPGRADES

composer install vendor/bin/phpcs --standard=phpcs.xml -s # PSR-12 + Joomla vendor/bin/phpcbf --standard=phpcs.xml auto-fix vendor/bin/phpunit --testsuite Unit --testdox unit tests # core: composer run phpcs : /Libraries/vendor/b in/phpcs --extensions=php -p --standard=ruleset.x ml . npm ci && cp cypress.config.dist.mjs cypress.conf .mjs npm run cypress:run system tests

Path: 3.10.x → **4.4** (migration) → **5.4** (disable Behaviour - Backward Compatibility; enable BC6) → **6.x** (Joomla Next channel). Update to the latest patch of each bridge before the next major. Check PHP 8.3 + DB minimums, backup, test on a copy.

BC plugin	Role
Backward Compatibility (5.0)	Joomla 4 code on 5; disable before 5.4 to 6
Backward Compatibility 6 (BC6)	J' aliases, JPATH_PLATFORM, CMS Compatibility 6 (BC6)
BC 7 (development)	code removed in 7.0 for one more cycle

7.0 removals: automatic \$app/\$db plugin properties (use getApplication()/getDatabase(), setApplication()), legacy listeners, setError()/getError() and CMSObject, Factory: getConfig/getSession/getMailer, User: get(), static module helper getXXX(), CMS Crypt, PHPAssHandler, Joomla.Text, getQuery(true) use createQuery()).

CHANGED SINCE OLDER TUTORIALS

6.0 / BC6	JFactory, JFactory, JHtml, JPATH_PLATFORM → Joomla\CMS\Factory, LanguageText, HTMLHelper, namespace classes, _JEXEC
5.0	generic events onContentPrepare(\$c,\$s,\$p) → event classes ContentPrepareEvent + getters; \$srouter → BeforeApiResponseEvent
7.0 removal Tests	\$this->app/\$this->db auto properties → Aware traits and setters
4.2	Codeception → Cypress system tests
6.1	TFA / OTP → MFA (com_users methods, passkeys)
6.0	reCAPTCHA plugin (removed 5.0) → Proof of Work captcha
6.0	TinyMCE 6 → 8
5.1 / 5.4 / 6.0	TUF-verified core updates (5.1); Automated Core / Updates (5.4, 6.0)
Docs	docs.joomla.org wiki (legacy) → User Guide guide.joomla.org + Developer Manual manual.joomla.org Joomla 4 EOL Oct 2025, Joomla 3 EOL
4.x	getQuery(true)/getDbO() → createQuery(); addScript() → Web Asset Manager; child templates since 4.1